Surplus Schematics Handbook

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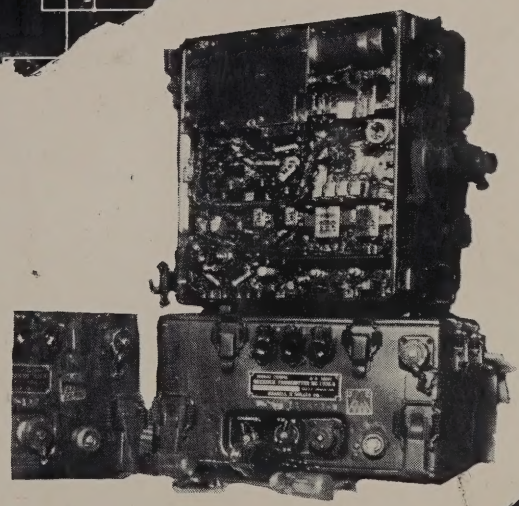
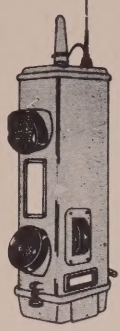
CQ Technical Series



Cowan Publishing Corp.

TELEMARINE—FOR OUTSTANDING ELECTRONIC SURPLUS

BC-611 WALKY-TALKY
COMPLETE WITH CASE



Now, for the first time, Telemarine offers the BC-611 Hand-Held Walky-Talky in complete form. Nothing extra to buy, except batteries which are readily available from most radio distributors. The BC-611 is a crystal-controlled transmitter and receiver covering the frequency range of 3.5 to 6.0 mc. Any good radio technician could easily modify this unit for operation up to 30.0 mc., or for operation in the 2.0-3.0 mc. Marine Band where it can ideally serve as an emergency transceiver (on 2182 KC) on boats too small for regular radiotelephone installation. Excellent for many other emergency applications, because of its compactness (measures 15¾"H. x 3⅝" W. x 5⅜"D.) and light weight, only 5½ lbs., complete with batteries. Supplied Complete with coils (plug-in type, installed), crystals (one for "transmit," one for "receive") for 1 frequency in 3.5 to 6.0 mc. range (no selection of frequency permitted on "Used" sets), tubes, and "A" Battery Adaptor which permits use of 2 conventional #2 flashlight cells in place of special "A" battery. "B" battery required is special 103 volt long rectangular unit, mfd. by Burgess Battery as "XX-69."

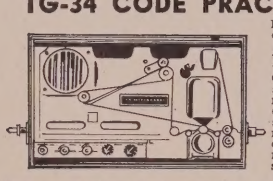
BC-611 WALKY-TALKY, as described, Used-Very Good Condition (not tested), pre-set for 1 frequency within 3.5 to 6.0 mc, (no selection of frequency), less batteries. Shpg. wt. 15 lbs. **EACH**.... **$49.50**

BC-611 WALKY-TALKY, COMPLETE, NEW, as described above but NEW, TESTED, and preset to any one desired frequency from 3.5 to 6.0 mc. **EACH** **$74.50**

BC-611 WALKY-TALKY CHASSIS, NEW! Excellent, new, Spare Chassis for above, priced so low that in the event of trouble it would be cheaper to insert a new chassis. Also excellent for the Amateur or Technician who prefers to make his own style of Walky-Talky. Supplied less tubes (1—1R5, 1—1S5, 1—1T4, and 2—3S4 tubes required), and less plug-in Osc. and RF Ant. Coils, less crystals. Supplied with Schematic Wiring Diagram). Shp. wt. 8 lbs. **$6.95**

EACH, CHASSIS, as described..... **PAIR OF COILS,** for above. RF Ant. & Osc..... **$1.25**

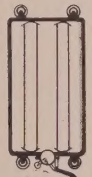
TG-34 CODE PRACTICE SET



Learn to copy code, or improve your speed with this unit. For individuals, schools, etc. **Complete,** portable automatic unit for reproducing audibly (built-in loud-speaker) code signals recorded in ink on paper tape. Pre-recorded tapes, lessons 1 to 15 (on 15 reels), available from many other surplus houses. Also usable for practicing "sending" by means of internal oscillator keyed by external hand key. Operates from 90 to 120 V. or 190 to 240 Volts, 60 Cycles AC. Units are Used—Very Good condition. Shpg. wt. 54 lbs. **SPECIAL** **$14.75**

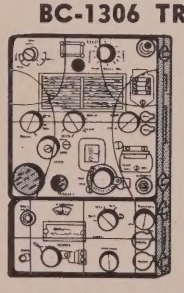
TG-34—AS ABOVE, NEW—UNUSED..... **$18.95**

ELECTRIC DEFROSTER FOR CAR OR TRUCK



Excellent for passenger cars, commercial vehicles, in stormy weather. Easily removed and stored away when not needed. Operates from electric 6V. DC (use two defrosters—in series—for 12V. DC systems, one can be installed on rear window) and each set is complete with switches, fuse holder, and necessary wire. Defroster has 4 resistance wires running inside glass (8" x 16") to produce heat for defrosting window. Defroster is held to window by 4 suction cups. NEW, UNUSED condition, each packed in metal case. Shpg. wt. 7 lbs. **EACH**..... **$7.95**

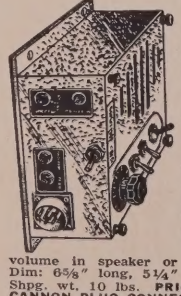
BC-1306 TRANS.-RECEIVER FOR MARS, HAMS, ETC.



For MARS application. 3800 to 6500 KC, MO or Crystal Control. Includes Crystal Calibration and Net Controls. NEW UNITS, with all tubes except Final RF 2E22 tube. Shpg. wt. 50 lbs. **EACH**..... **$22.50**

PE-237 POWER SUPPLY
For Above BC-1306. Supplies all necessary voltages and current for both transmitter and receiver sections. Operates from 6, 12, or 24 Volts DC. "LIKE-NEW" units. Shpg. wt. 125 lbs. **EACH**..... **$14.95**

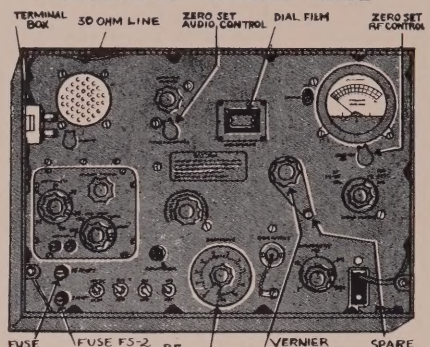
REMOTE CONTROL FOR MOBILE OR MARINE USE



This is the popular Navy type TCS Remote Control, which includes a heavy-duty loudspeaker, Ideal for mobile (ham, taxi, truck, etc.) or Marine application either as a local or Remote Control Unit. Includes 3 toggle switches, one for turning, "Trans." on or off; one for turning "Rec." on or off; and, one for selection of "speaker" or "Phone" reception. Additional toggle switch permits "Radio" or Intercom usage. 2 pair of Microphone and phone jacks are provided and connections are made through a Cannon receptacle connector (complete Schematic provided). Also provided is a T-pad Volume Control, on front panel, for regulating audio volume in speaker or phones. All units are NEW. Dim: 6⅝" long, 5¼" high, and 3½" deep. Shpg. wt. 10 lbs. **PRICE EACH**..... **$6.95**

CANNON PLUG CONNECTOR, to fit above, each.. **$1.65**

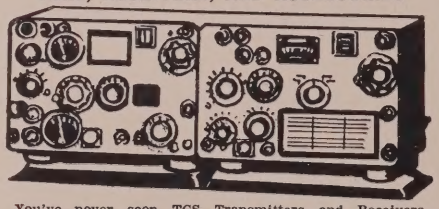
HI-PRECISION FM SIGNAL Generator—Mobile Band



Model I-208, is a precision instrument worthy of the finest lab, mobile service and installation shop, or for production testing of mobile FM equipment. Previously, it was a scarce and expensive instrument, until we made a fortunate "buy" in a limited quantity. Freq. Range in 2 bands, 1.9 to 4.5 mc (for IF alignment and tests) and 19 to 45 mc. Freq. of output of signal is maintained within .03% of dial calibration over a temperature range from 0 to 60 degrees. Other outstanding features are: *Variable Frequency Deviation, 0-5 KC on 1.9 to 4.5 mc band, 0-50 KC each side of resting frequency on 19 to 45 mc band. *Calibrated Microvolter-Attenuator, adjustable up to 100,000 microvolts, developed at the termination of a 30-ohm line. Up to .84 volt available at high output terminals. *RF Vacuum Tube Voltmeter incorporated, 5 modulation frequencies provided by internal audio oscillator, 150, 400, 1,000, 2,500, and 5,000 cps. External modulation also provided for. *Operates from either 110 volts, 60 cycles AC, or 12 volts DC which is ideal for in the field work. *Crystal Calibrator, whose output is 1 mc and harmonics for checking and maintaining accuracy of signal generator. Each I-208 is supplied complete with tubes, calibrator crystal, 12V. DC Dynamotor and 110V. AC power supply are self-contained. Instruction Sheets and Schematic Diagram. Shpg. wt. is 145 lbs. (in wooden case). Available in like new (tested) or Used-Excellent (not tested) condition. Act fast, our limited supply won't last long!

USED, EXCELLENT.....**EACH** **$69.95**
LIKE-NEW, TESTED.....**EACH** **$110.00**

SENSATIONAL BARGAIN!! TCS TRANSMITTERS, RECEIVERS, AND ACCESSORIES



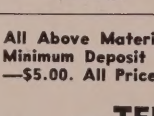
You've never seen TCS Transmitters and Receivers priced so low! This communications "work horse" of the Navy and Coast Guard never sold in surplus for less than $300. per set (Acq. cost over $4000.00 per set). It's ideal for mobile or fixed station use; Dependable, trouble-free, and consistent. Excellent for Marine-Band (2-3 mc) applications if certain front panel controls on Transmitter are removed, after pre-setting of frequencies, to meet FCC requirements. It will even meet FCC requirments regarding second harmonic radiation, since the transmitter uses a Buffer stage, plus (variable) link coupling between the final RF Tank and a pi-network which couples to the antenna, all of which reduces harmonic radiation to absolute minimum. Other features of TCS Transmitters and Receivers are: *complete coverage 1.5 to 12.0 mc. all band-switching. *4-channels crystal-control, plus one channel manual tuning (in transmitter precision VFO). *uses 1625 instant heating filament tubes (equivalent to Type 807) in RF Amp and Mod. sections of Transmitter to minimize drain. *Rated at 40 watts CW and 20 watts phone output when transmitter plate voltage is 425 V., but this power can be easily doubled by using 600 volts plate supply. *Transmitter or Receiver designed to operate from either 12, 24, 110 V. DC, or 110/220 V. AC power supplies. Power Supply Diagrams furnished. *Receiver is super-sensitive superhet, with excellent sensitivity & selectivity characteristics, and includes BFO circuit for CW reception. Units priced below are complete with tubes, good clean condition but untested.

TCS-5(to 9) TRANSMITTER, with all tubes, schematic diagram and power supply diagrams, as outlined above. Shpg. wt. 60 lbs.
PRICE EACH **$39.95**

TCS-9(to 14) TRANSMITTER, same as above but has minor modifications which make these models more desirable. **EACH** **$59.95**

TCS-5(to 14) RECEIVER, complete with tubes and schematic diagram, as described above. Shpg. wt. 50 lbs. **EACH**..... **$69.95**

WRITE FOR PRICES ON OTHER TCS ACCESSORIES.

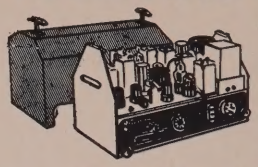


TCS ANTENNA LOADING COIL. Used with above equipment to obtain maximum performance with short whip antenna. Has 6-position tapped switch for various lengths of antenna. In metal housing 6" H. x 9½" W. x 6¾" D. Shpg. wt. 6 lbs. **EACH** **$7.95**

All Above Material Subject to Prior Sale. 25% Minimum Deposit with All C.O.D.'s. Min. Order —$5.00. All Prices F.O.B. Our Address.

—TELEMARINE—
COMMUNICATIONS CO., INC.
142 WEST B'WAY, NEW YORK 13, N. Y.
PHONE: COrtlandt 7-5444

30-40 MC DELUXE FM RECEIVER FOR MOBILE POLICE & FIRE CALLS

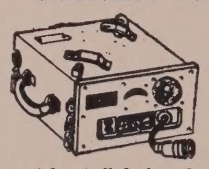


This FM receiver, the R-237 part of an AN/VRC-2 Eqpt., is a single channel-crystal controlled receiver covering industrial, police, and fire dept. frequencies. It is of superior design and construction with all of the best features such as: double-conversion superhet (455 KC and 4.3 inc. I.F.'s) with both oscillators crystal-controlled, noise squelch, double limiter stages, loud-speaker output, etc. Exceptionally well built to provide constant trouble-free service. Uses a total of 13 tubes, 2 in the vibrator-power supply which is designed for 6 V. DC operation. All units are in practically like-new condition and exceptionally clean. Dimensions with removable cover, illustrated. 11⅛" x 10" x 15". Separate loudspeaker, or phones (if desired) required. Supplied with tubes and schematic diagram, but less crystals, loudspeaker, etc. Shpg. wt. 65 lbs.
PRICE, EACH, Not tested..... **$29.95**
CRYSTAL, for 2nd Conv. Osc., 4755KC..... **$1.50**
CONTROL UNIT, contains Squelch & Vol. Controls, Pilot Lights, On-Off Switches, for both Rcv'r. & Trans. **EACH** **$5.95**

TRANSMITTER COMPANION for ABOVE

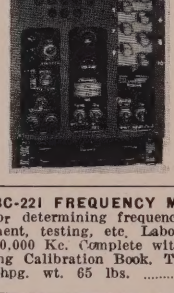
Transmitter T-193/VRC-2 complements the Receiver described above, to provide FM voice transmissions in the 30 to 40 MC band. Transmitter is crystal controlled, and provides a power output of 25 watts. Transmitter is same as Galvin (Motorola) type FMTR-25-VM, and is physically the same in appearance as the receiver shown above. Designed for operation from 6V. DC, has self-contained power supply which in some instances is Dynamotor, in others Vibrator Power Pack. All units are in Used-Excellent condition, in fact almost "Like-New," but are untested at the Low Price we are quoting. Supplied with tubes, schematic diagram, but less crystal or control head. Shpg. wt. 70 lbs.
PRICE, EACH Transmitter T-193/VRC-2, as described..... **$19.95**

BC-659 TRANS-RECEIVER CONVERT TO CITIZENS BAND



June-'59 issue of CQ Magazine furnishes the necessary conversion data to convert this low-priced Trans-Receiver for satisfactory operation in the new Class D Citizens Band. This Transmitter-Receiver, in its unmodified form, operates over a frequency range of 27.0 to 38.9 MC, has 2 crystal-controlled channels directly controlling the Receiver frequency and through AFC action controlling the Transmitter frequency. It is rated at 2 watts power output. Voice FM, and uses a total of 14 loktal type, low-drain filamentary tubes. Its compact dimensions, 11⅞" x 16⅜" x 21½", with built-in loudspeaker and Meter Indicator makes it ideally suitable for under-dash installation. Power Supply is separate either dry batteries or Vibrator Power Supply PE-120 which operates from 6, 12, or 24 Volts DC. All units are with tubes, and USED-VERY GOOD (untested) condition. Shpg wt. 50 lbs.
BC-659, USED-GOOD as des. **EACH**..... **$10.95**

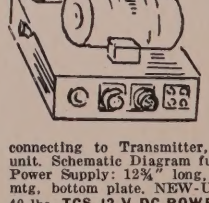
BC-683 MOBILE FM RECEIVER



Provides 10 push-button selected channels as well as continuous variable tuning over the entire range of 27.0 to 39.0 mc. Includes features such as: built-in loudspeaker, squelch circuit, A.V.C., double limiter circuits, headphone jacks, sensitivity control, accurate calibrated tuning dial, etc. Supplied complete with 12V. DC Dynamotor for 12-volt operations, all tubes, and schematic diagram which is glued to bottom of housing case. Shpg. wt. 65 lbs.
PRICE, EACH, Used-Excellent Condition. Not **TESTED** **$24.95**

BC-221 FREQUENCY METER. The best instrument possible for determining frequency of transmitter or receiver, alignment, testing, etc. Laboratory Precision! Range 125 KC to 20,000 Kc. Complete with Calibrating Crystal, tubes, matching Calibration Book, Tested, Used—Excellent. Shpg. wt. 65 lbs. ..... **EACH** **$74.50**

TCS—12 V DC POWER SUPPLY FOR MOBILE OR MARINE



Famous TCS eqpt. dual-dynamotor complete Power Supply, containing separate dynamotors for Transmitter and Receiver sections. Input is 12 V DC; Transmitter dynamotor output is 440 V DC at 200 ma; Receiver dynamotor output is 220 V DC at 100 ma. Complete input (RF and Hash) and output filtering, plus incorporated heavy-duty 12 V DC starting relay for tranmitter dynamotor. 3 Cannon connectors on side (connector plugs extra) for connecting to Transmitter, Receiver, and Remote Control unit. Schematic Diagram furnished with each unit. Dim. of Power Supply: 12¾" long, 7" wide, 7½" high with shock-mtg, bottom plate. NEW-UNUSED. Shpg. wt. 40 lbs. **TCS-12 V DC POWER SUPPLY. EACH** **$17.95**

$2.50

Surplus Schematics Handbook

By

Kenneth B. Grayson, W2HDM

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Introduction

We have received so many hundreds of requests for circuit diagrams of surplus equipment that we are preparing this book in self defense. In it you will find, in addition to the circuit, some info which should be helpful in getting you started on a conversion. Please keep in mind that CQ is always interested in the result of your efforts. Many of these Sows' Ears make wonderful Silk Purses, and should your feet trod firmly over unfamiliar territory in the jaunt why not (once you have untangled the above metaphors) trace out a map for the following tourist. CQ Pays for Articles. With just ordinary luck you can get back many times the price of this book.

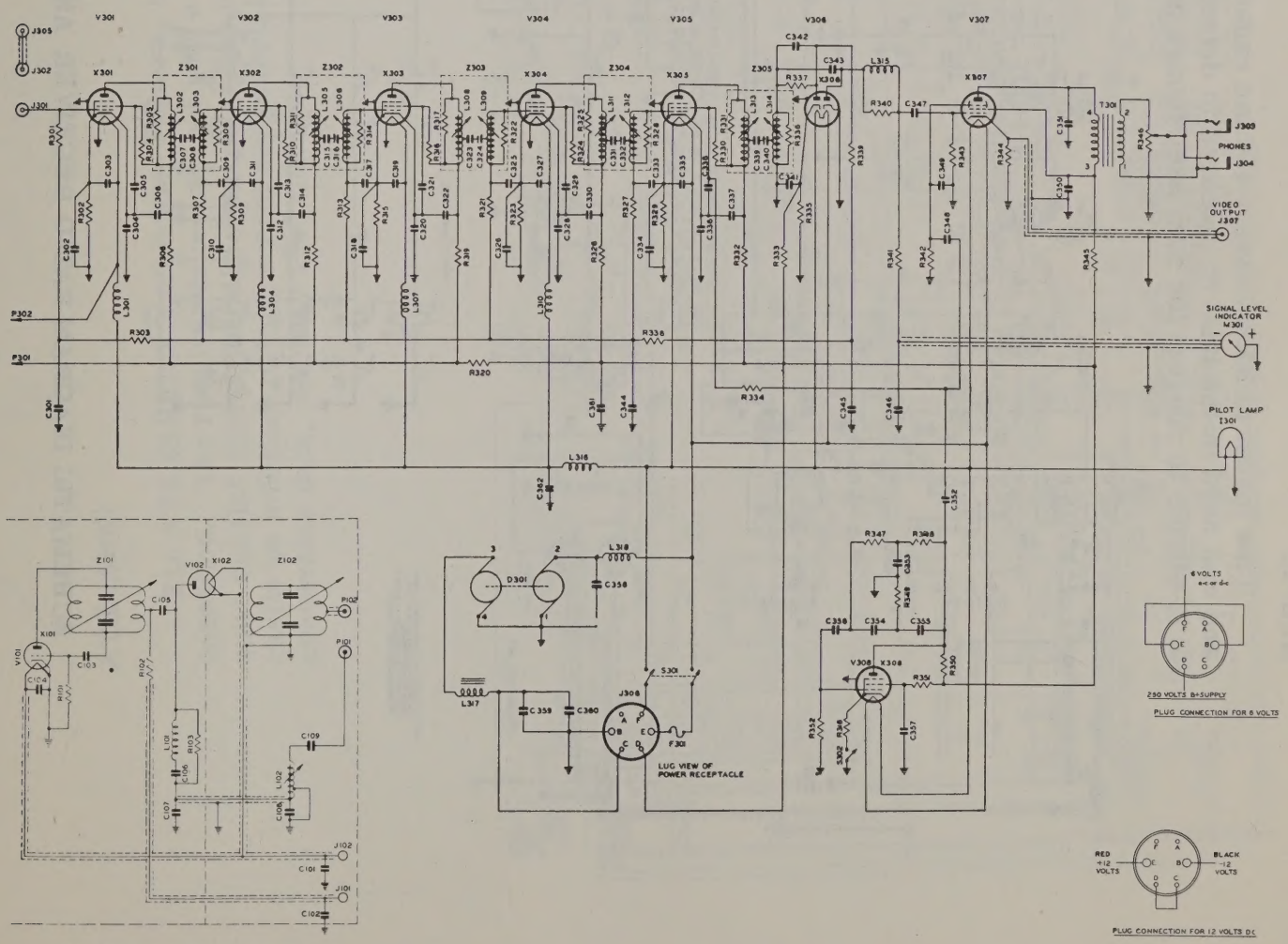
APR-1

The APR-1 is a Naval Air Force VHF-UHF radar search receiver covering the frequency range of 80 mc to 950 mc in two bands. The basic receiver, without plug-in tuning unit is the CPR-46 ABC. It is essentially an IF amplifier detector audio-video amplifier having a 30 mc input to the IF amplifier. The output impedance is 600 ohm audio and 100 ohm video. A 1000 cycle audio tone can be used as a BFO if a cw signal is being received.

The 80 to 370 mc tuning unit is designated CPR-47 AAE and the 290 to 950 mc band is covered by the CPR-47 AAF tuning unit. Signals can be picked up as high as 2850 mc using harmonics of the oscillator.

Power consumption is 6.25 amperes at 12 volts using the internal dynamotor. Provisions have been made for an external power supply to provide 6 volts ac or dc for the filaments and 250 volts for the plate supply.

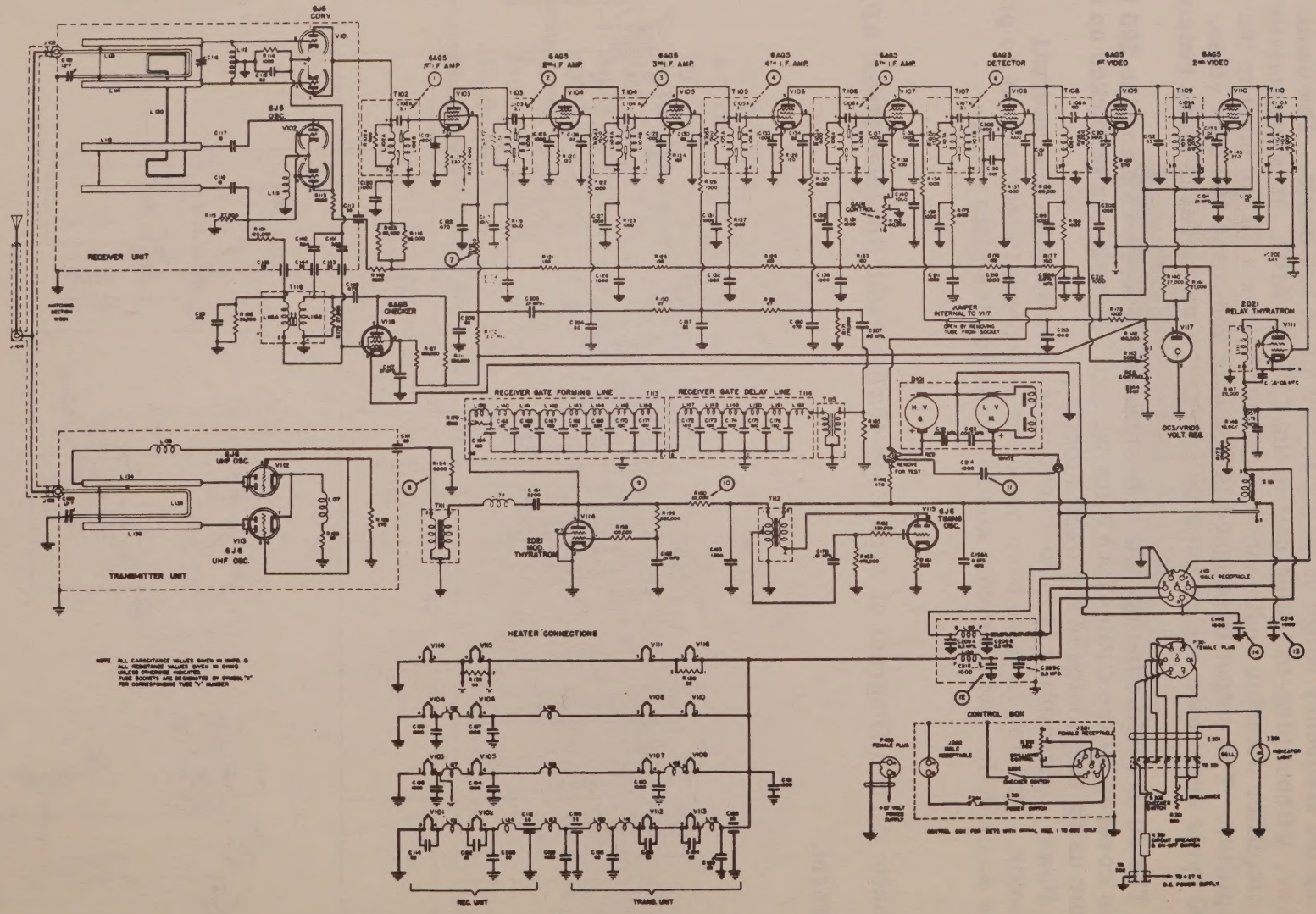
Schematic Circuit Diagram of Type CPR-46ABC Radio Receiver Model APR-1 Equipment.



Schematic Circuit Diagram of Type CPR-47AAE Tuning Unit Range A Model ARC-1 Equipment

APS-13

This forest of 6J6's was a 450 mc radar known as "Tail-End Charlie" and was used in the tails of bombers to detect approaching enemy aircraft. It is simple to convert for ham use, though not too effective even at best.



SCHEMATIC DIAGRAM RADIO RECEIVER AND TRANSMITTER APS-13

ATK (ARK)

The ATK (ARK) is a television camera, transmitter and receiver for VHF operation. The receiver is a superhet with a 50 mc IF. The ATJ (ARJ) is quite similar except for a 23.5 mc IF. The scanning rate is 14 kc, which can easily be modified to the present commercial standard of 15.75 kc. For conversion data, see May 1957 CQ.

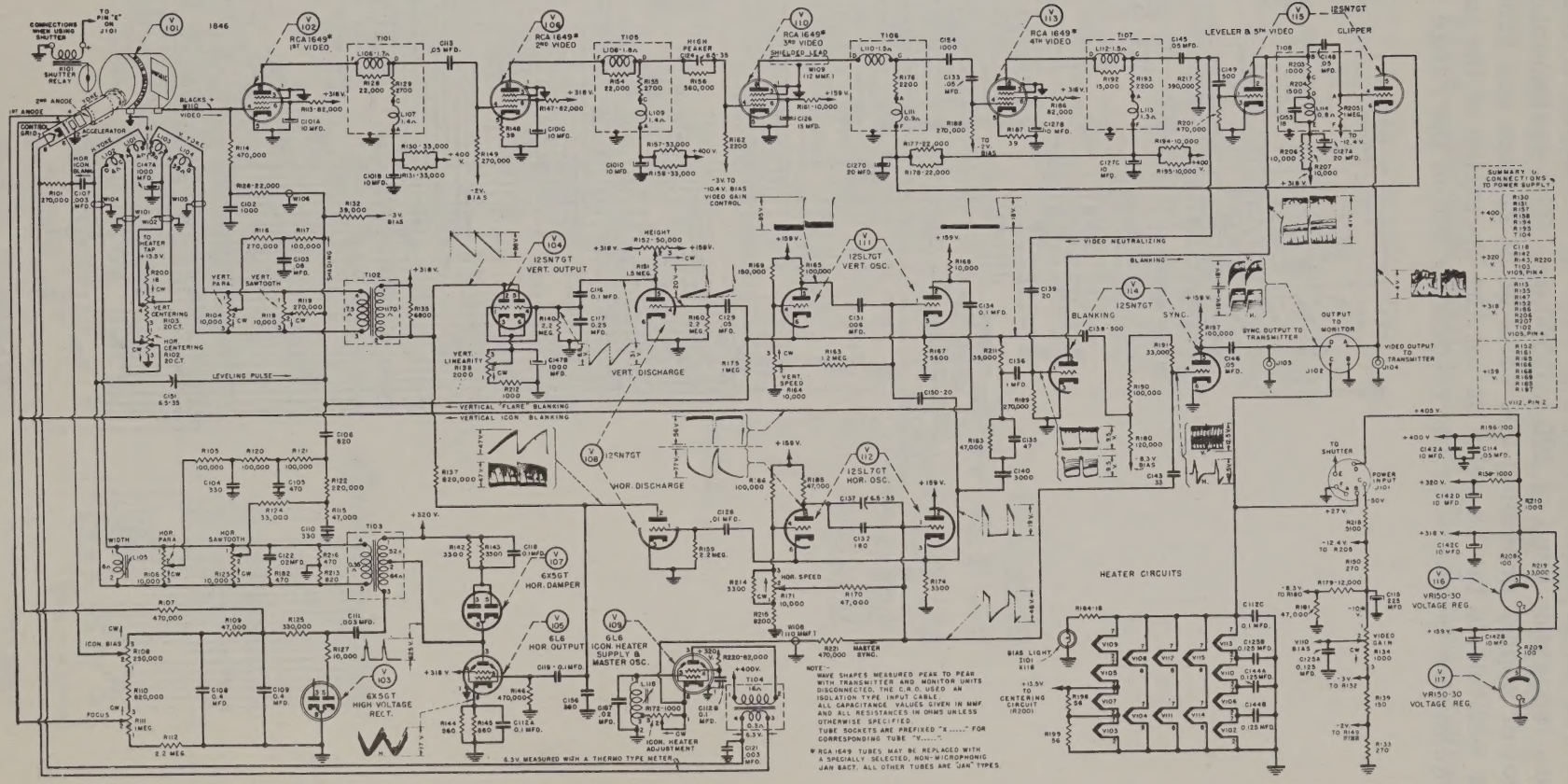
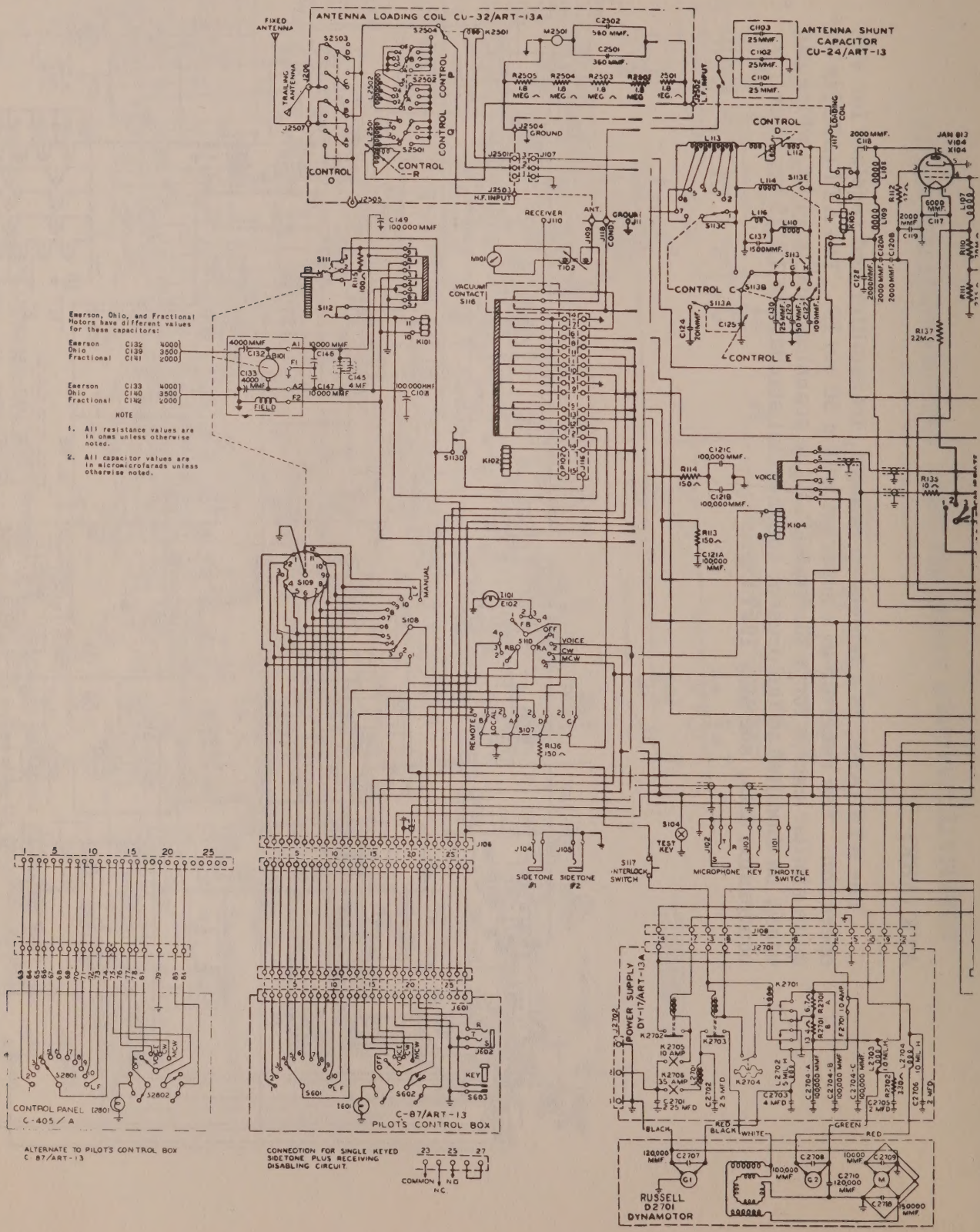


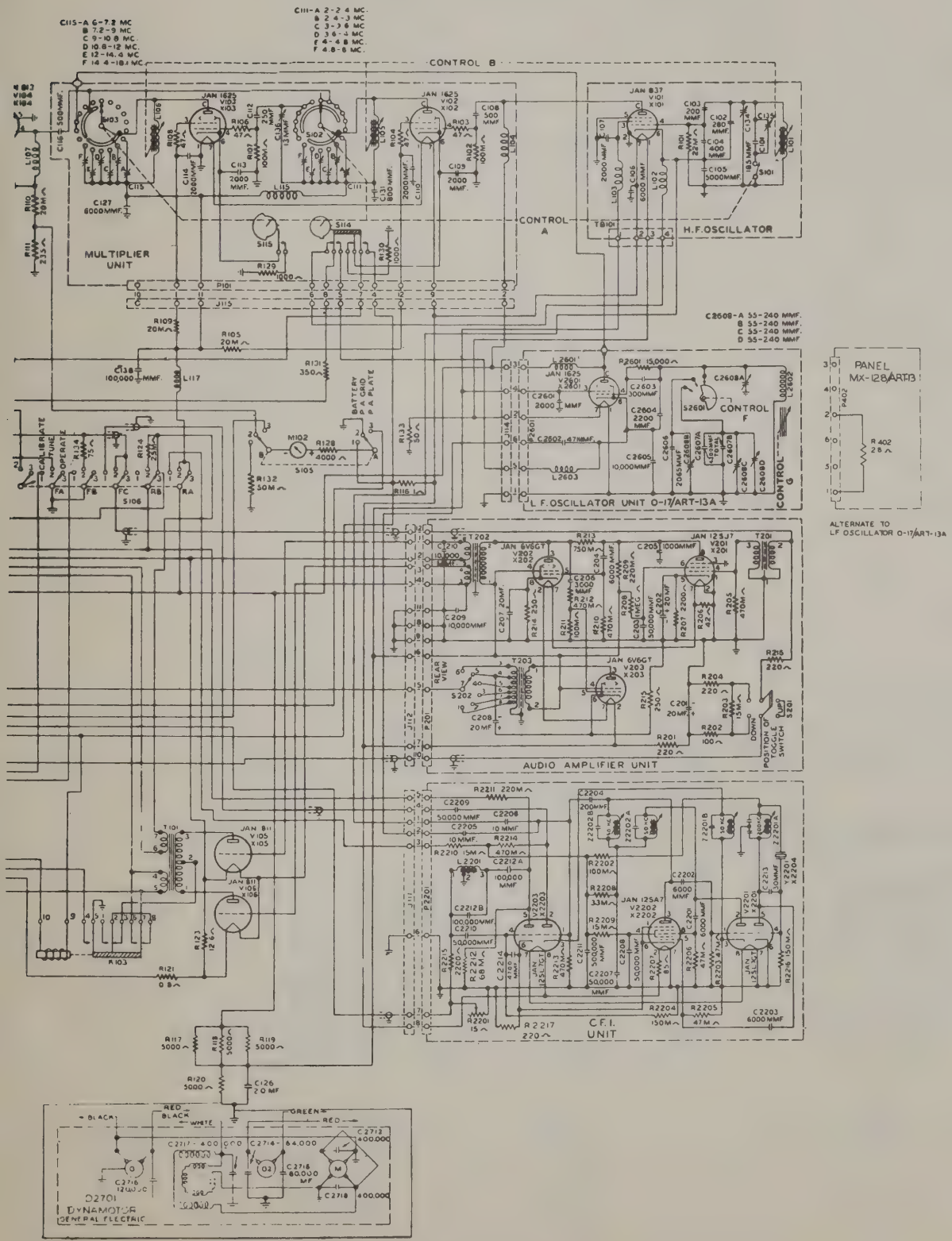
Figure 1—Conversion Unit CRV-59AAE, Schematic Diagram

The AN/ART-13 is an airborne transmitter for use in patrol aircraft. It covers the frequency range of 2000 to 18,100 kc . Some versions have an additional low frequency band of 200 to 1500 kc. The equipment uses an external dynamotor power supply providing 400 volts dc at 225 ma and 1250 volts at 250 ma. This is in addition to the 28 volts dc for the operation of the tube filaments and motors. The equipment is preset to any frequency within the range specified and may be automat-


ANTENNA LOADING COIL CU-32/ART-13A
ANTENNA SHUNT CAPACITOR CU-24/ART-13
CONTROL C
CONTROL E
RECEIVER
VACUUM CONTACT S116
Emerson, Ohio, and Fractional Motors have different values for these capacitors:
NOTE
1. All resistance values are in ohms unless otherwise noted.
2. All capacitor values are in micromicrofarads unless otherwise noted.
CONTROL PANEL 12801 C-405/A
ALTERNATE TO PILOT'S CONTROL BOX C-87/ART-13
C-87/ART-13 PILOTS CONTROL BOX
CONNECTION FOR SINGLE KEYED SIDETONE PLUS RECEIVING DISABLING CIRCUIT
POWER SUPPLY PP-17/ART-13A
RUSSELL D2701 DYNAMOTOR
SIDETONE #1
SIDETONE #2
INTERLOCK SWITCH
MICROPHONE
KEY
THROTTLE SWITCH

ically tuned upon selection of a particular channel by the radio operator. The power output is approximately 200 watts from an 813. The unit uses a VFO, but has a crystal calibrator included to check the frequency. At high altitudes a switch is actuated to reduce power.

Output is either CW or voice, amplitude modulated and keying is accomplished by means of a keying relay.

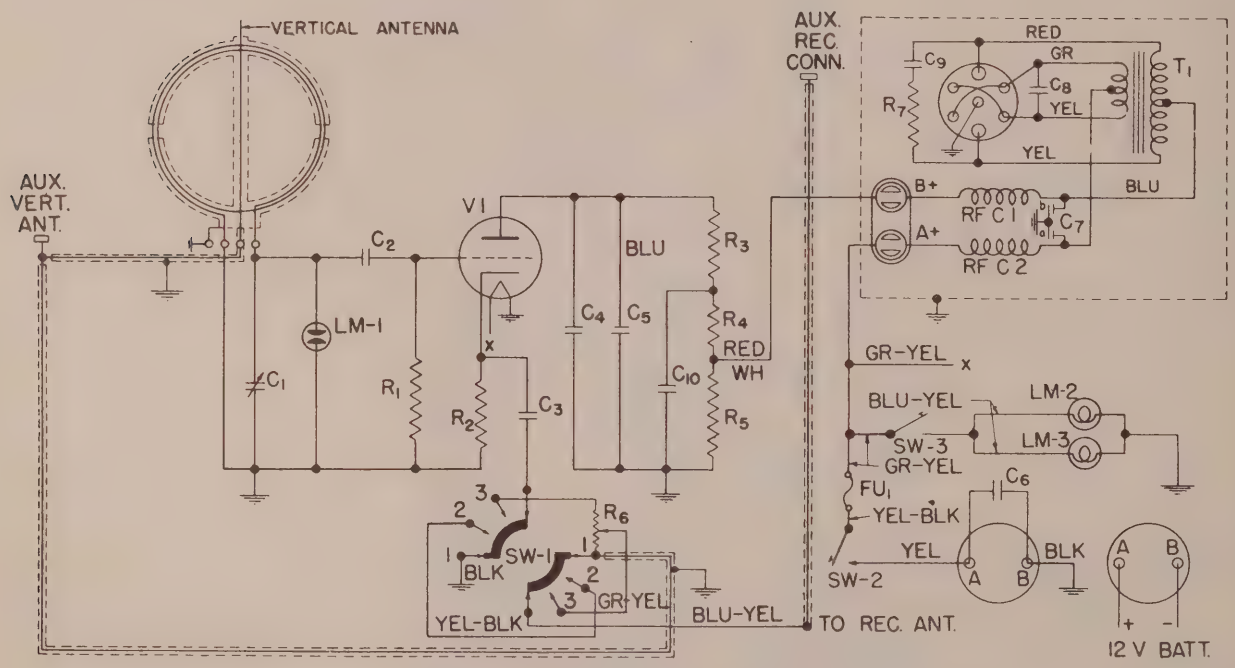


AS-81/GR

The AS-81/GR is a direction finding loop attachment for use with any communications receiver covering the frequency range desired. It uses one of four loops, depending upon the band desired, and supplies loop directivity to the receiver. A twelve volt vibrator within the set supplies all necessary high voltages.

Loop	Color Code	Freq. Range
AT-27/GR	White	1.1 to 2.1 mc
AT-28/GR	Red	2.1 to 4.2 mc
AT-29/GR	Blue	4.2 to 8.5 mc
AT-30/GR	Yellow	8.0 to 16 mc

Provision is made for loop balance and sense to determine the direction of the received signal.



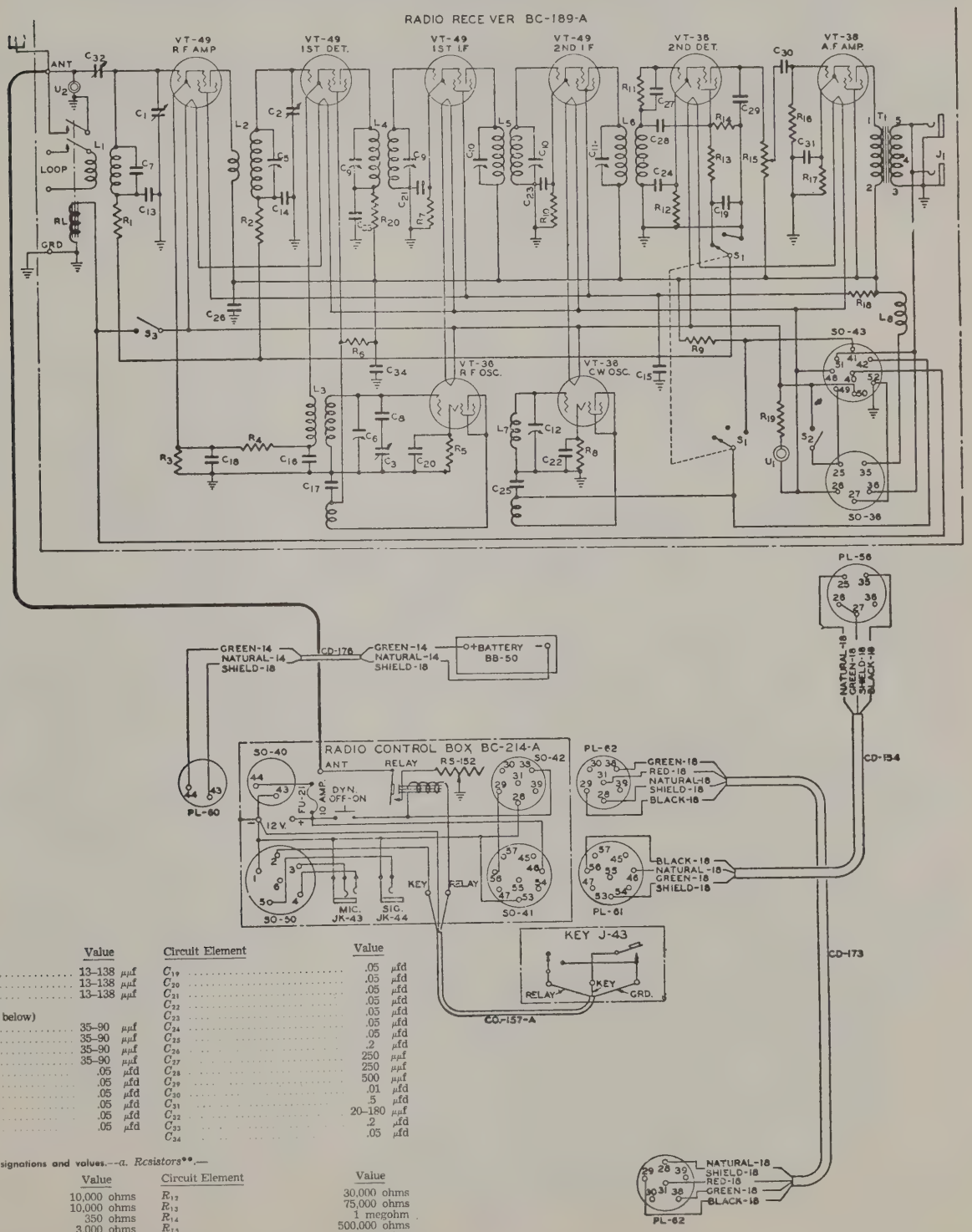
REF. NO.	DESCRIPTION
R_1	1 MEG 1/2 WATT
R_2	300 Ω 1/2 WATT
R_3, R_4	50,000 Ω 1/2 WATT
R_5	25,000 Ω 10 WATT
R_6	1500 Ω POT
R_7	5000 Ω 1/4 WATT
C_1	12-252 μμF
C_2	600 μμF 500 V

REF. NO.	DESCRIPTION
C_3, C_4	.01 μF 300 V
C_5, C_6	.25 μF 600 V
C_{7a}	.5 μF 50 V
C_{7b}	.1 400 V
C_8	1 μF 50 V
C_9	.0025 μF 2000 V
C_{10}	.5 μF 400 V
V_1	12J5GT/VT-135

REF. NO.	DESCRIPTION
LM-1	NEON LAMP
LM-2, LM-3	PILOT LAMP
FU_1	2 AMP FUSE
SW_1	SWITCH, ROTARY
SW_2, SW_3	SWITCH, TOGGLE
RF C_1	1MH 15 Ω
RF C_2	55 TURNS #16 ENAMELED COPPER WIRE
T_1	TRANSFORMER, POWER

The BC-189 is a predecessor of the BC-312. It covers the range of 150 kc to 13 mc by twelve sets of plug in coil drawers. The receiver is a superheterodyne with an IF of 470 kc. The BC-189A has an IF of 850 kc. When operating near the IF frequencies some instability will be noted.

Power is supplied by a dynamotor, and the input is 12V dc. Output is to a pair of headsets.



b. Capacitors.—

Circuit Element	Value	Circuit Element	Value
C_1	13–138 μμf	C_{19}	.05 μfd
C_2	13–138 μμf	C_{20}	.05 μfd
C_3	13–138 μμf	C_{21}	.05 μfd
C_4 (none)		C_{22}	.05 μfd
C_5, C_6, C_7, C_8 (see *c* below)		C_{23}	.05 μfd
C_9	35–90 μμf	C_{24}	.05 μfd
C_{10}	35–90 μμf	C_{25}	.2 μfd
C_{11}	35–90 μμf	C_{26}	250 μμf
C_{12}	35–90 μμf	C_{27}	250 μμf
C_{13}	.05 μfd	C_{28}	500 μμf
C_{14}	.05 μfd	C_{29}	.01 μfd
C_{15}	.05 μfd	C_{30}	.5 μfd
C_{16}	.05 μfd	C_{31}	20–180 μμf
C_{17}	.05 μfd	C_{32}	.2 μfd
C_{18}	.05 μfd	C_{33}	.05 μfd
		C_{34}	

Circuit element designations and values.—*a. Resistors***.—

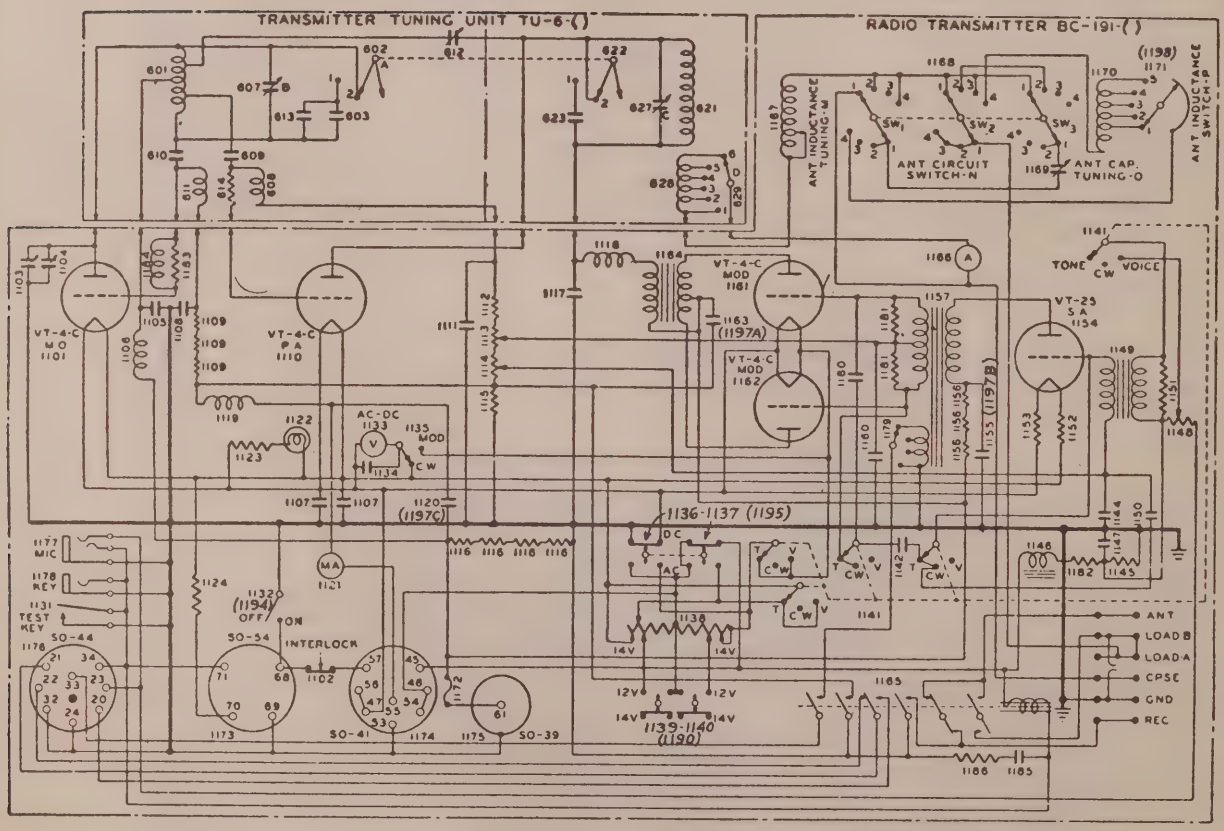
Circuit Element	Value	Circuit Element	Value
R_1	10,000 ohms	R_{12}	30,000 ohms
R_2	10,000 ohms	R_{13}	75,000 ohms
R_3	350 ohms	R_{14}	1 megohm
R_4	3,000 ohms	R_{15}	500,000 ohms
R_5	1,000 ohms	R_{16}	1 megohm
R_6	20,000 ohms	R_{17}	2,000 ohms
R_7	500 ohms	R_{18}	30,000 ohms
R_8	3,000 ohms	R_{19}	60 ohms
R_9	20,000 ohms	R_{20}	1,000 ohms
R_{10}	500 ohms	R_{21}	3,000 ohms
R_{11}	50,000 ohms		

**In addition to the resistors indicated on the circuit diagram of figure 2, coil sets C-142, C-142-A, C-143, and C-143-A have a 200,000-ohm resistor (RS-148) connected to the secondary terminals of both transformers L_1 and L_2.

BC-375 (BC-191)

The BC-375, built by GE, building 89, 1 River Road, Schenectady, N. Y., is an archaic behemoth whose design was finalized in 1935, and was produced in tremendous quantities for war destruction in planes and other expendable vehicles. The design engineers responsible almost had heart attacks when they received an ARC-5 for test comparison and found it to be a fraction of the size and weight, infinitely more stable and put out more power.

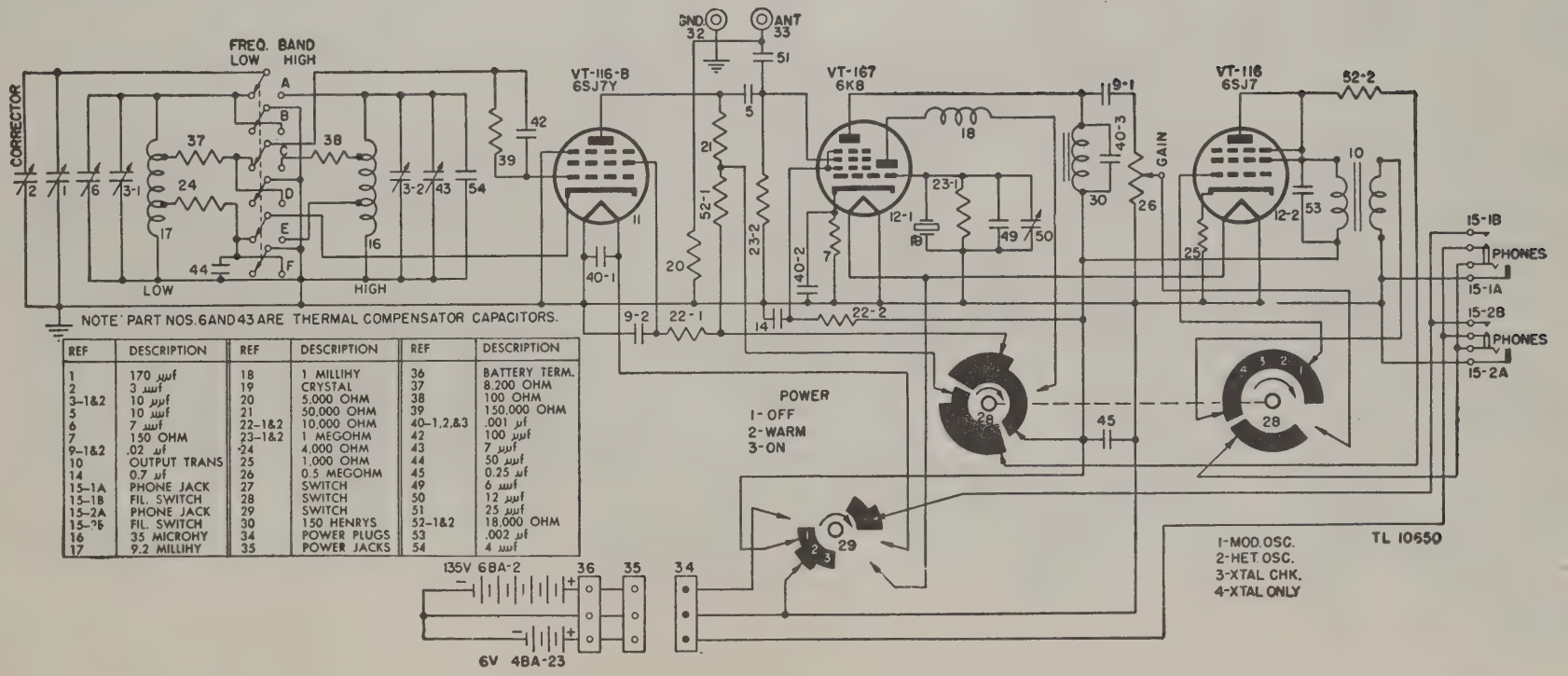
The BC-375 is designed for 28 volts; the BC-191 for 14 volts, otherwise they are almost identical. There are a few moderately usable parts in the transmitter and the tuning units make nice cabinets.



Radio transmitter BC-191-(*) with transmitter tuning unit TU-6-A or -B—schematic diagram.

BC-221 (LM)

The BC-221 is a heterodyne frequency meter with a range from 125 kc to 20,000 kc. It uses a crystal calibrator at 100 kc. For most amateur use a small power supply is built into the battery compartment. The Navy model is designated LM, with the odd numbered models (LM-3, 5, 7) being ac powered. When buying one of these units it is a good idea to get one with the calibration booklet if possible as the dial is not directly calibrated in frequency. This is one of the handiest pieces of test equipment for the hamshack and is available at quite reasonable prices from surplus dealers. No hamshack should be without a precision frequency meter. For conversion data, see CQ, April, 1959, P. 79.

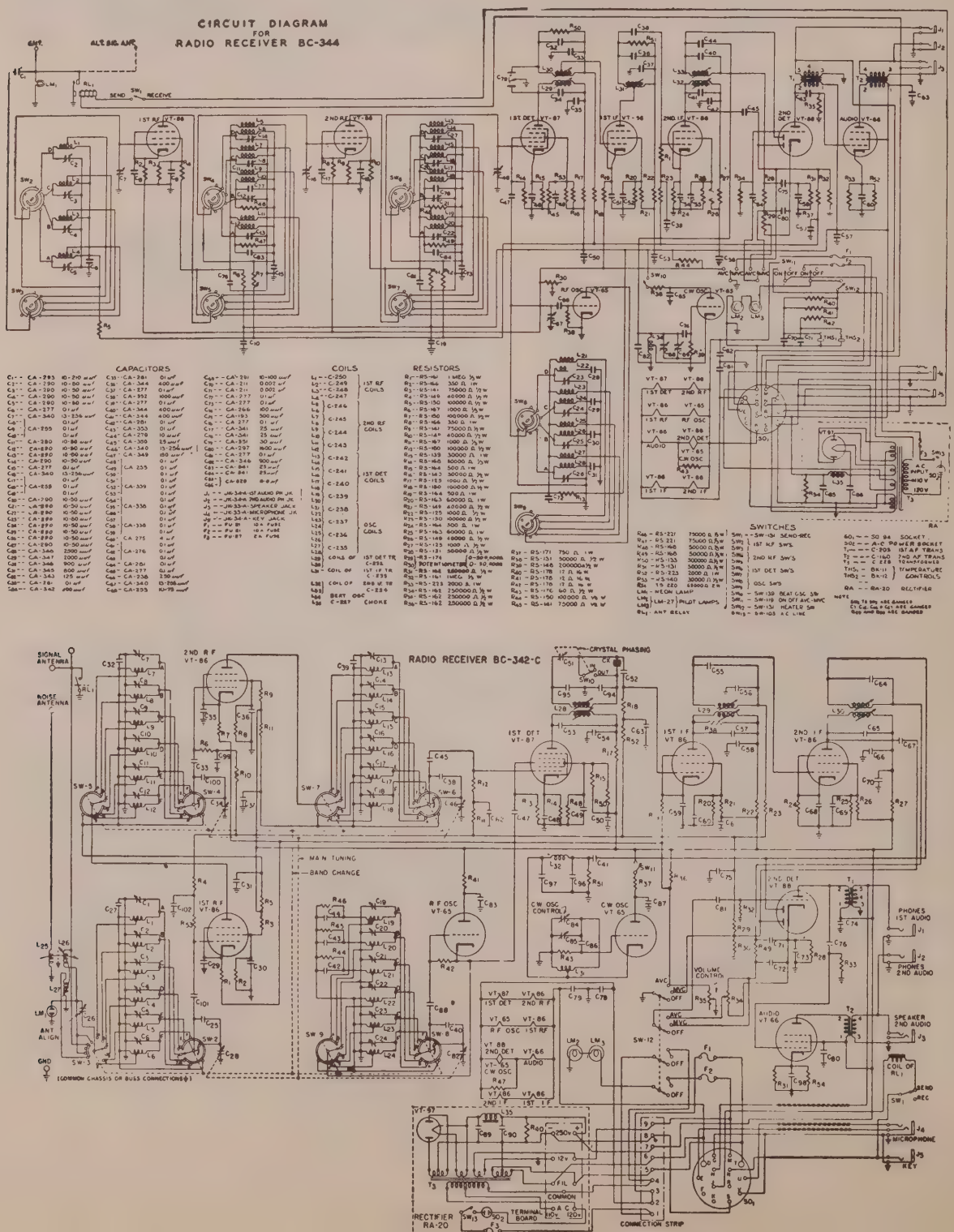


NOTE: PART NOS. 6 AND 43 ARE THERMAL COMPENSATOR CAPACITORS.

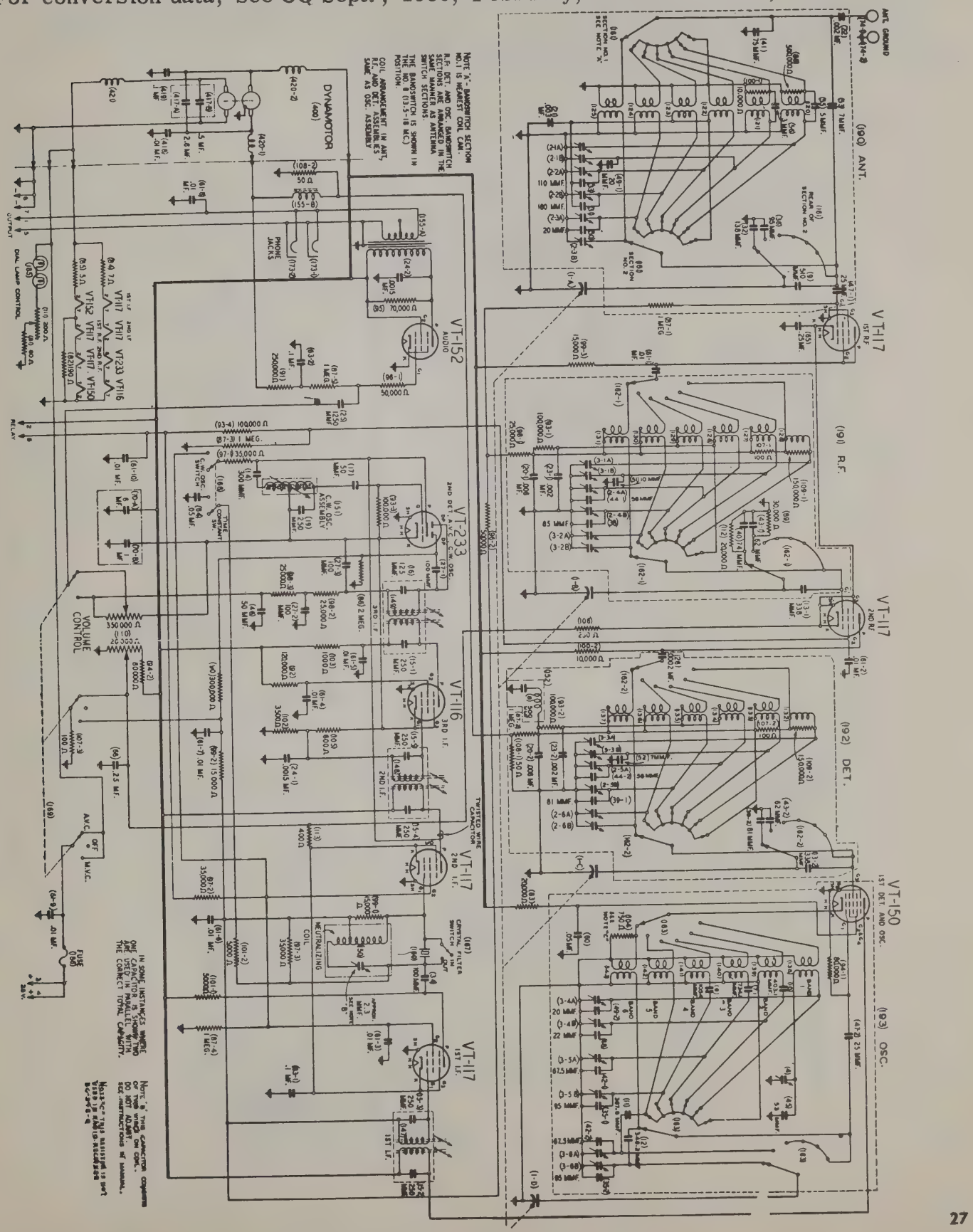
REF	DESCRIPTION	REF	DESCRIPTION	REF	DESCRIPTION
1	170 μμf	18	1 MILLIHY	36	BATTERY TERM.
2	3 μμf	19	CRYSTAL	37	8,200 OHM
3-1&2	10 μμf	20	5,000 OHM	38	100 OHM
5	10 μμf	21	50,000 OHM	39	150,000 OHM
6	7 μμf	22-1&2	10,000 OHM	40-1,2,&3	.001 μf
7	150 OHM	23-1&2	1 MEGOHM	42	100 μμf
9-1&2	.02 μf	24	4,000 OHM	43	7 μμf
10	OUTPUT TRANS	25	1,000 OHM	44	50 μμf
14	0.7 μf	26	0.5 MEGOHM	45	0.25 μf
15-1A	PHONE JACK	27	SWITCH	49	6 μμf
15-1B	FIL. SWITCH	28	SWITCH	50	12 μμf
15-2A	PHONE JACK	29	SWITCH	51	25 μμf
15-2B	FIL. SWITCH	30	150 HENRYS	52-1&2	18,000 OHM
16	35 MICROHY	34	POWER PLUGS	53	.002 μf
17	9.2 MILLIHY	35	POWER JACKS	54	4 μμf

These equipments are receivers used for communications purposes. They are basically identical in appearance. The BC-312 is a superheterodyne receiver covering a frequency range of 1500 to 18,000 kc. It operates from a 12 volt source (dc) at about 7 1/2 amperes, for those models with thermostatic heaters for oscillator stability, and about 4.5 amperes for those models without such heaters. An ac model, operating at 110 volts ac is known as the BC-342. Those models using heaters consume about 100 watts, while those without use about 75 watts. The intermediate frequency is 470 kc.

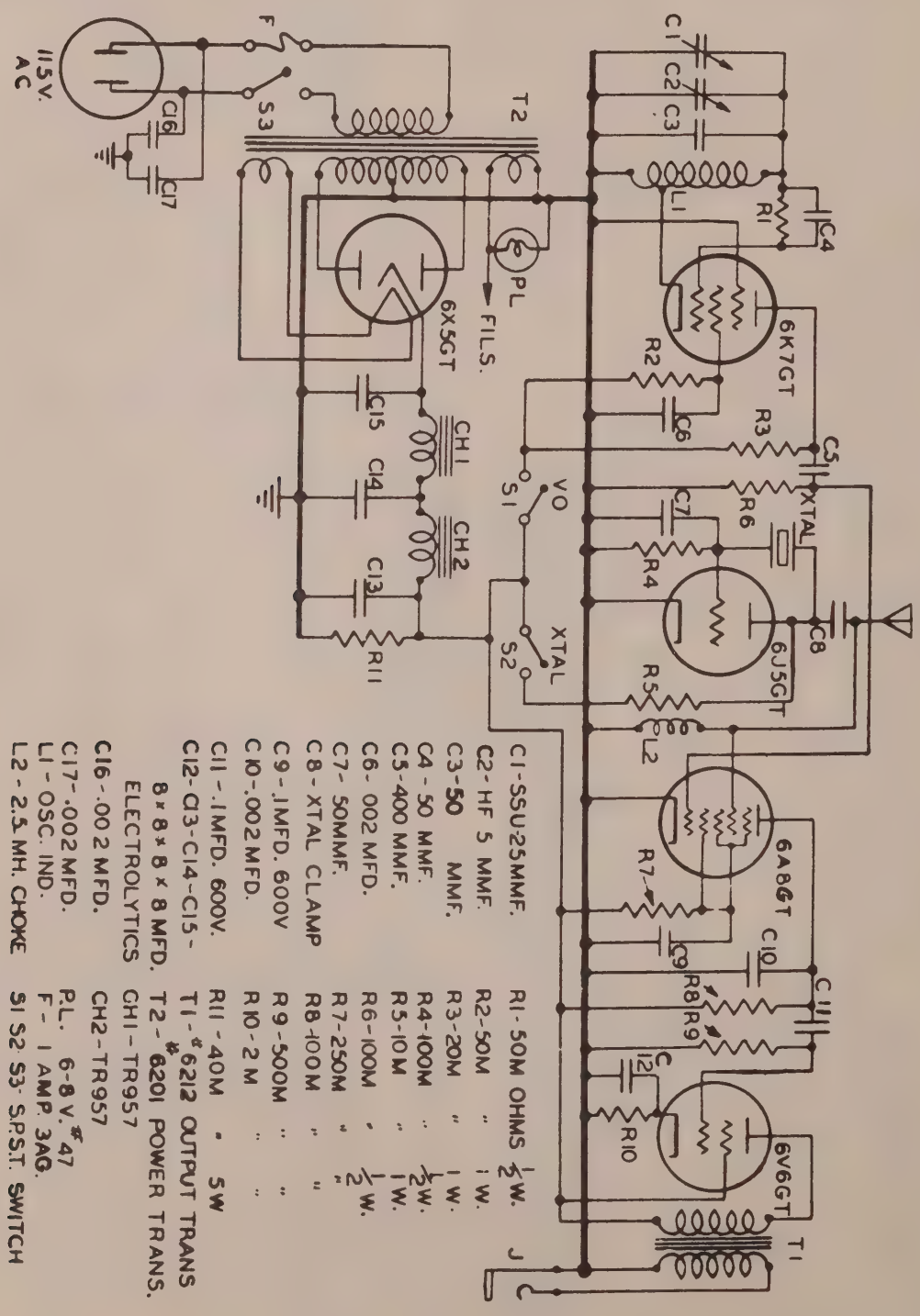
The BC-314 is the low frequency counterpart of the BC-312. It operates over a frequency range of 150 to 1500 kc. It has an IF of 92.5 kc. The BC-314 has an ac counterpart in the BC-344.



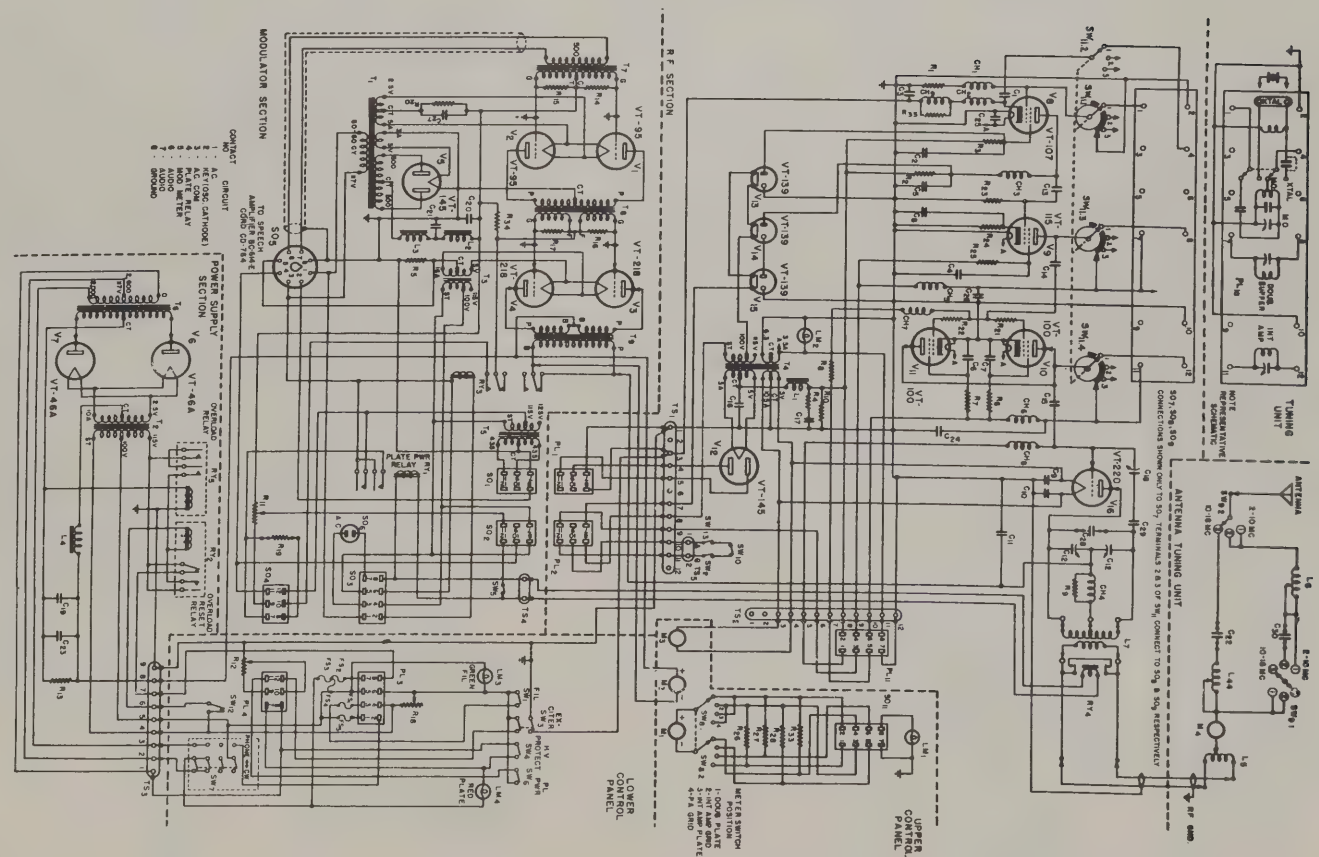
The BC-348 is essentially the same as the BC-312 series of receivers, however it is considerably broader with respect to selectivity. The BC-348 covers the range 950 kc to 18 mc with an IF of 915 kc. This is a pretty good receiver for the amateur. For conversion data, see CQ Sept., 1956, February, 1959 and March, 1959.



The BC-438 is a heterodyne frequency meter with a range from 195-215 mc. It uses a crystal at 4.1 mc to provide a 20.5 mc standard frequency (205 mc tenth harmonic) and a variable 19.5 - 21.5 mc oscillator to zero beat the unknown signal for measurement (again using the tenth harmonic of the oscillator) or for providing a signal for receiver adjustments.


C1 C2 C3 L1 R1 C4
6K7GT R2 C6 R3 C5
XTAL R6 C7 R4 C8
6J5GT R5 L2
6A8GT R7 C9 C10 C11 R8 R9 C12 R10
6V6GT T1
J
T2 PL FILS.
6X5GT CH1 CH2 C15 C14 C13 R11
VO S1 XTAL S2
F S3 115V. AC C16 C17
C1 - SSU-25MMF.
C2 - HF 5 MMF.
C3 - 50 MMF.
C4 - 50 MMF.
C5 - 400 MMF.
C6 - 002 MFD.
C7 - 50MMF.
C8 - XTAL CLAMP
C9 - .1MFD. 600V
C10 - .002 MFD.
C11 - .1MFD. 600V.
C12 - C13 - C14 - C15 - 8 x 8 x 8 x 8 MFD. ELECTROLYTICS
C16 - .002 MFD.
C17 - .002 MFD.
L1 - OSC. IND.
L2 - 2.5 MH. CHOKE
R1 - 50M OHMS 1/2 W.
R2 - 50M " 1 W.
R3 - 20M " 1 W.
R4 - 100M " 1/2 W.
R5 - 10M " 1 W.
R6 - 100M " 1/2 W.
R7 - 250M " "
R8 - 100M " "
R9 - 500M " "
R10 - 2 M " "
R11 - 40M " 5W
T1 - #6212 OUTPUT TRANS
T2 - #6201 POWER TRANS.
CH1 - TR957
CH2 - TR957
P.L. - 6-8 V. #47
F - 1 AMP. 3AG.
S1 S2 S3 - S.P.S.T. SWITCH

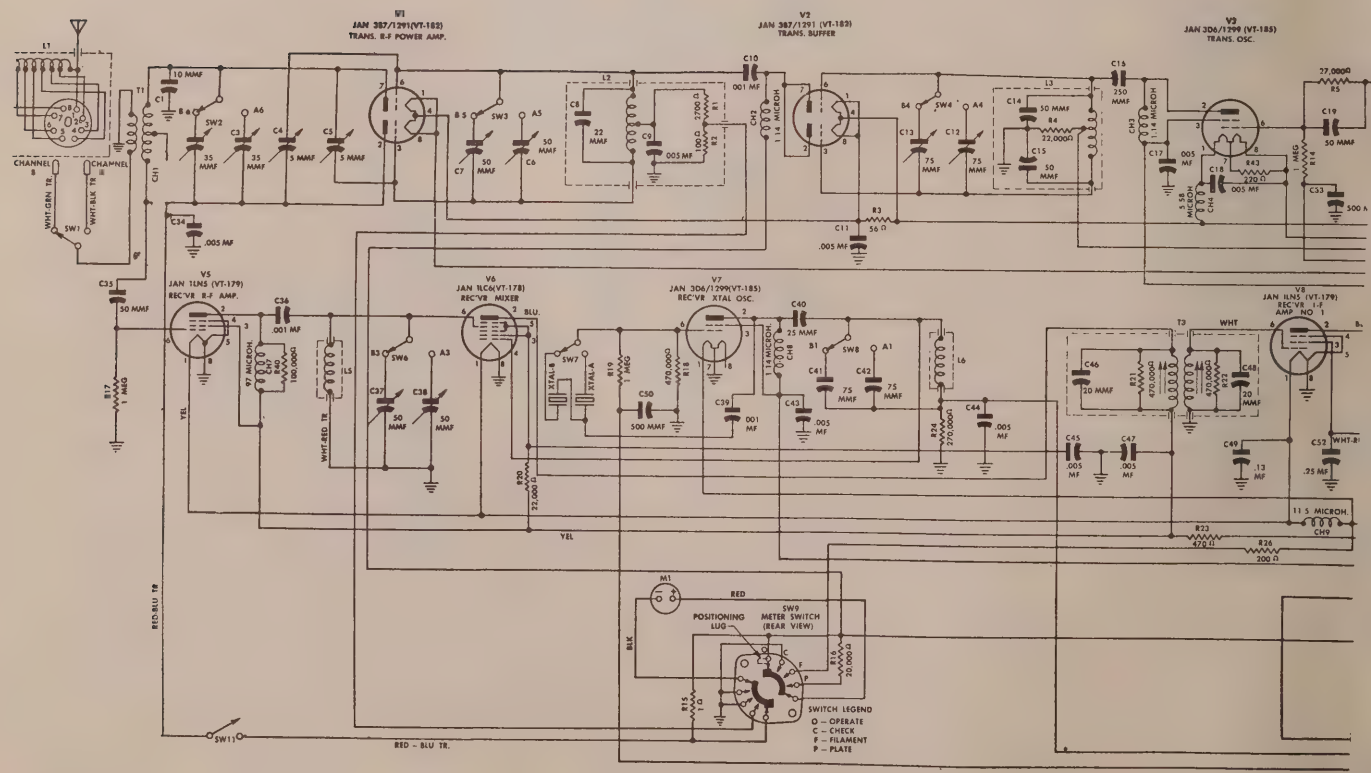
While it is possible to use the BC-610 with the tuning boxes, the stability resulting is not consistent with current amateur standards and will probably lead to considerable correspondence with FCC monitoring stations plus rapidly deteriorating neighbor relations due to TVI, BCI, HAI, EOI, etc. Ad Nauseum. 4 screws remove the tuning box assembly. It is a simple matter to drive the transmitter with a low power VFO by mounting a SO-239 connector on the exciter deck and driving the 807 buffer-multiplier. If a higher power exciter is available, the 250th final may be driven directly. Don't rejoice yet. The TVI is still there.



The BC-620 is a low power, frequency modulated transmitter-receiver unit, covering the frequency range of 20 to 27.9 mc. It operates on two preset crystal controlled frequencies, which are selected by a front panel switch. It is designed to operate from batteries or a six or twelve volt power supply system. It was originally intended for mobile or portable use.

The receiver is a superheterodyne with a 2.88 mc intermediate frequency. The receiver local oscillator is crystal controlled. The transmitter operates with a VFO. The VFO is held on the proper frequency by a reactance tube which is in turn operated by receiving a small portion of the transmitted frequency, and correcting the VFO to IF.

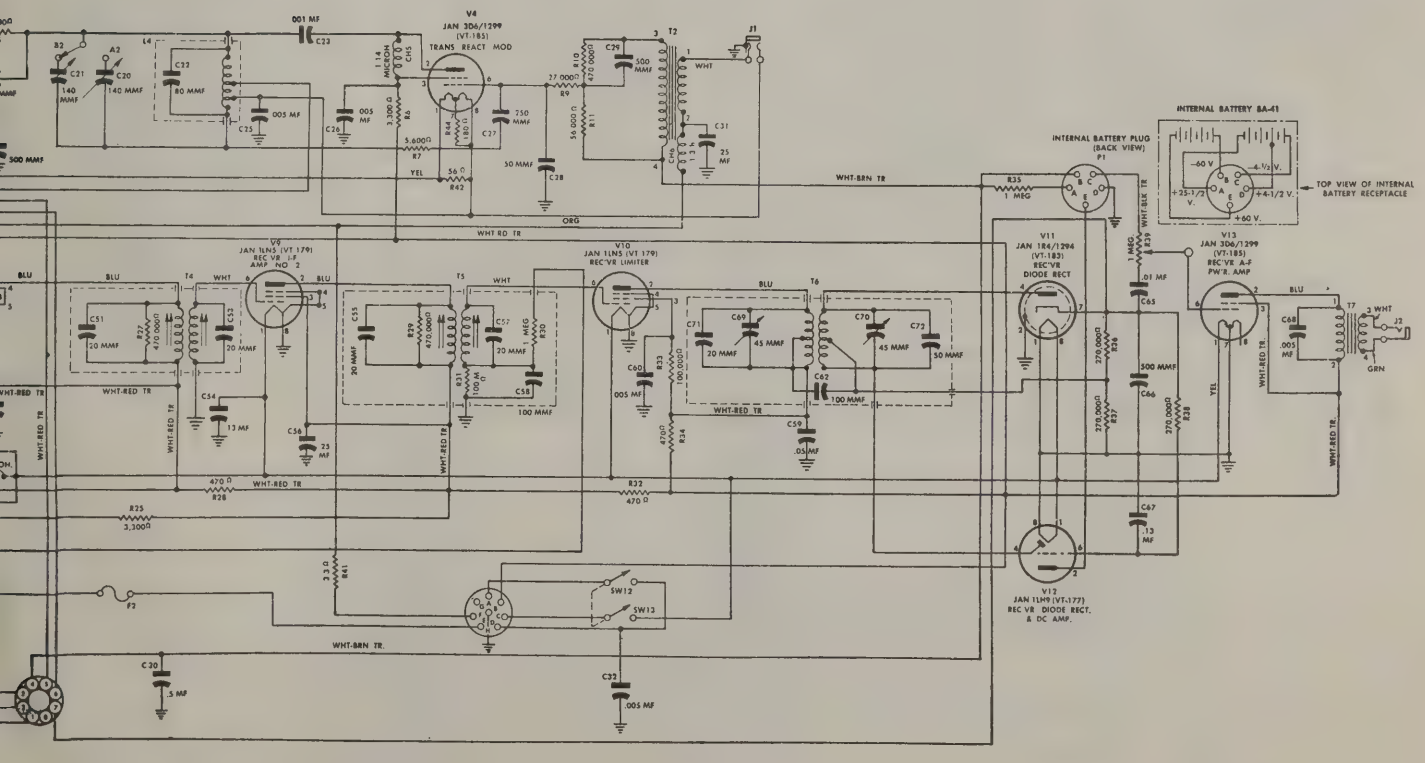
Transmitter power output is approximately one watt. The receiver uses crystals in the frequency range of 5.7067 mc to 8.340 mc. The power requirements of the BC-620 are as follows:



FUNCTION	Battery	Battery No.	Volts	Amperes
Receive	Rec "A"	BA-40*	1.5	0.7
Receive	Rec "B"	BA-40*	90.0	0.025
Trans.	Rec "A"	BA-39&BA-40*	1.5	0.7
Trans.	Rec "G"	BA-39&BA-40*	90.0	0.045
Trans.	TR. "A"	BA-39&BA-40*	7.5	0.300
Trans.	TR. "B"	BA-39&BA-40*	150.0	0.045

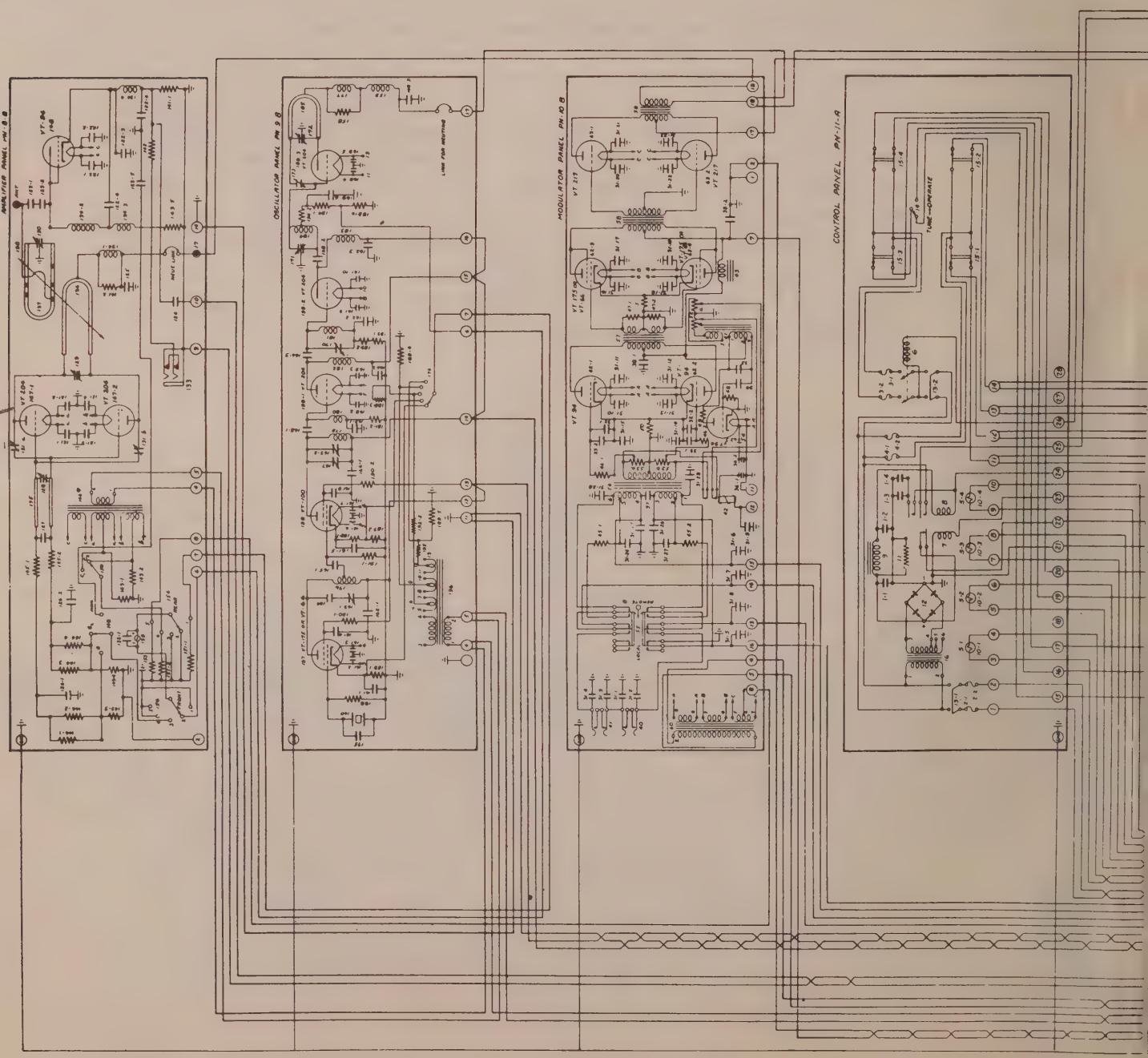
*BA-39 and BA-40 are multi-voltage batteries.

Note: Red dots on the trimmer shafts indicate the side of the slot that should be towards the dial card. The width of the slot is about one-tenth division. In case the red dot has worn off, its proper position can be found by fully meshing the capacitor. The end of the slot near the 0 of the 0-6 scale is the end that should carry the red dot. The BC-659 is similar to the BC-620 except for frequency range (27.0 to 38.9 Mc), intermediate frequency (4.3 Mc) and minor circuit differences.



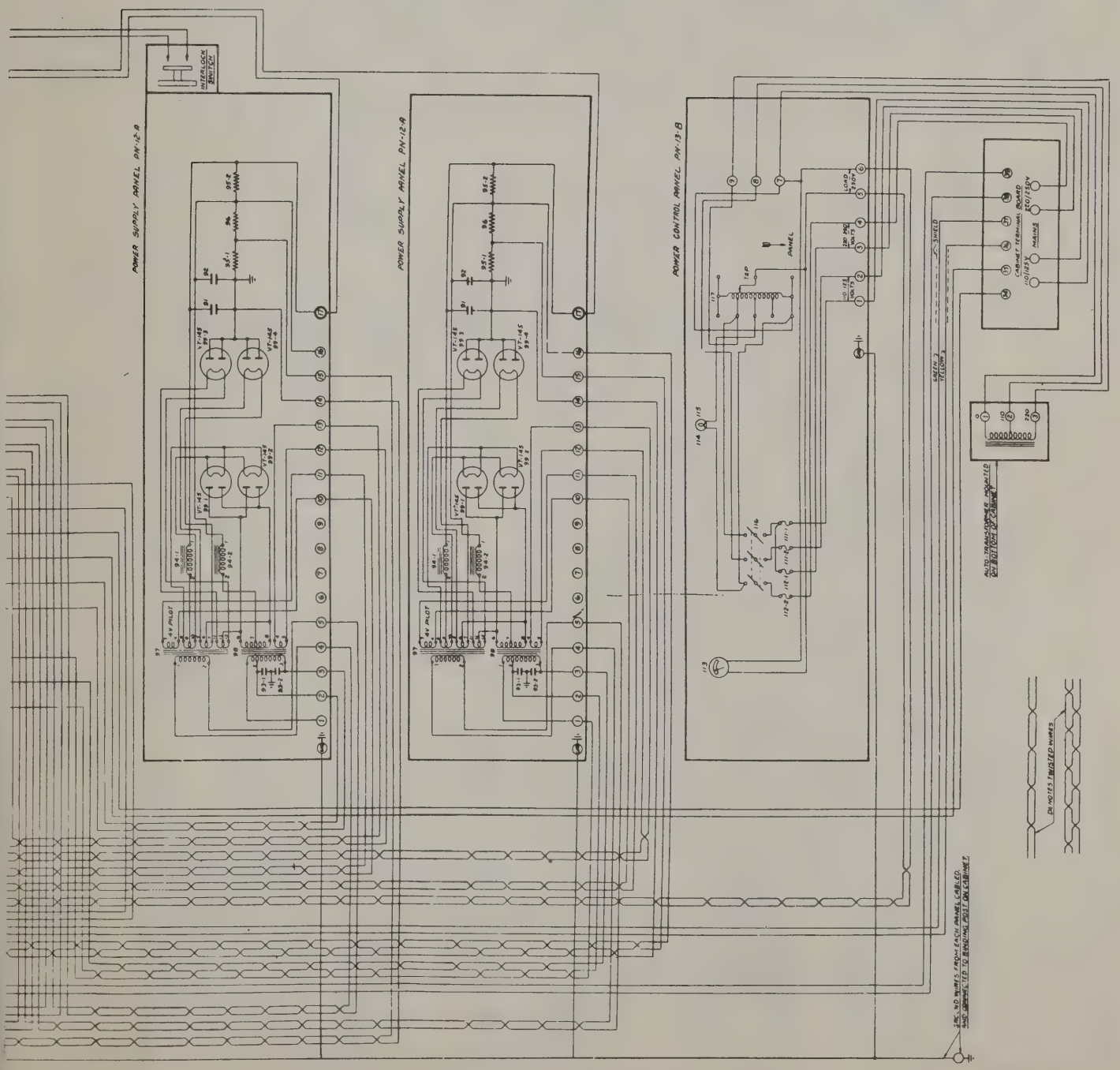
BC-640

The BC-640 is a ground type, rack-mounted transmitter for the 100 to 156 mc band for general communications with aircraft It is amplitude modulated, providing 50 watts output over the band. Provision is made for the use of tone modulation when MCW operation is necessary. Operation is crystal controlled, with frequency changing being accomplished by changing the crystal and the circuits. Crystals used are in the 5555.5 to 8666.6 mc range, for a total

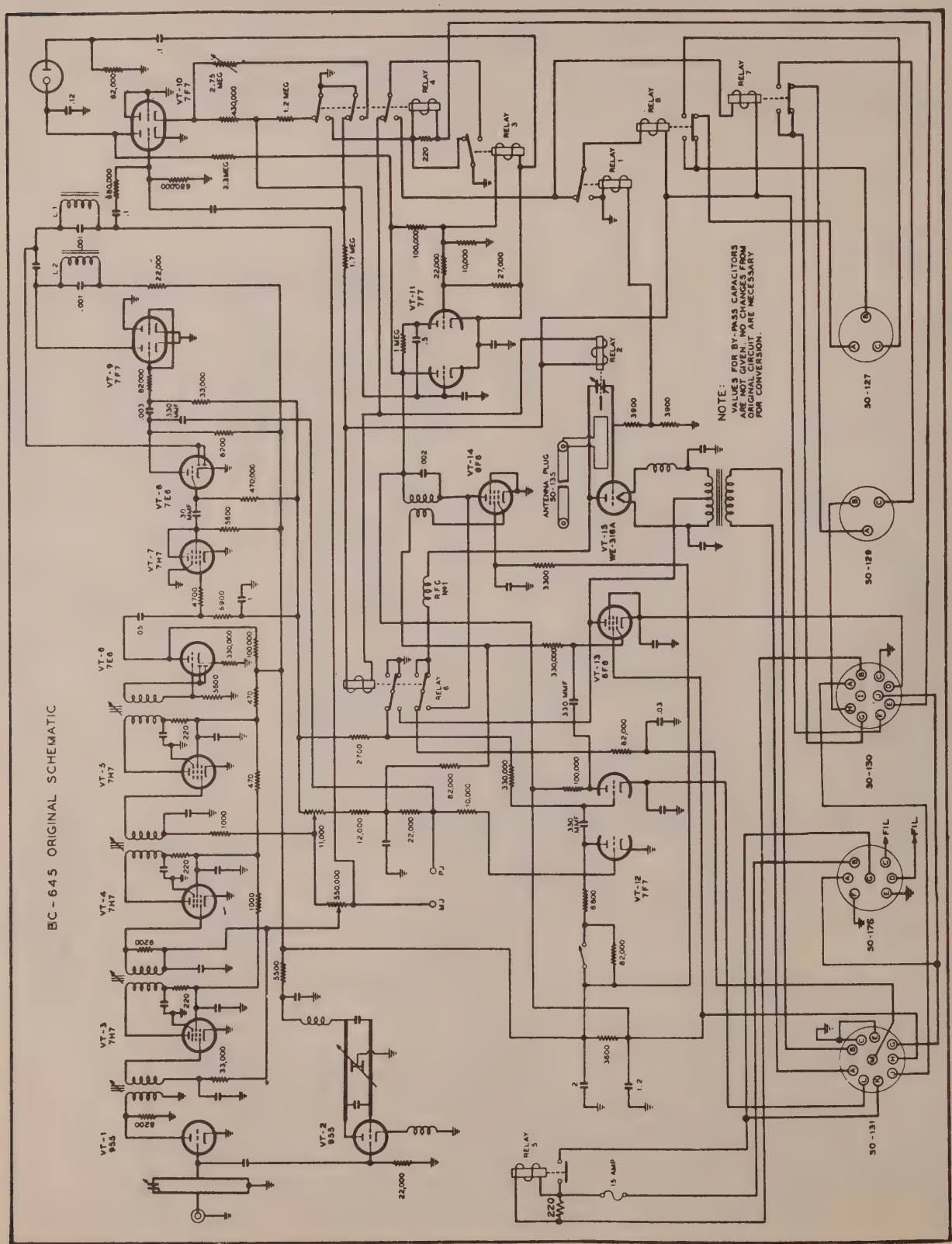


multiplication of 18 times. Various sections make up the complete transmitter and each is individually removable for repairs. Input power is 110/220 volts 60 cycles single phase. Minor differences exist between various models such as the addition of dial locks, and the reduction in the number of meters employed in the BC-640(B)

This is the biggest, most powerful TVI generator ever built, and with slight modification will be able to completely blank out all vhf and uhf channels for miles around. This gives TVI even when turned off.



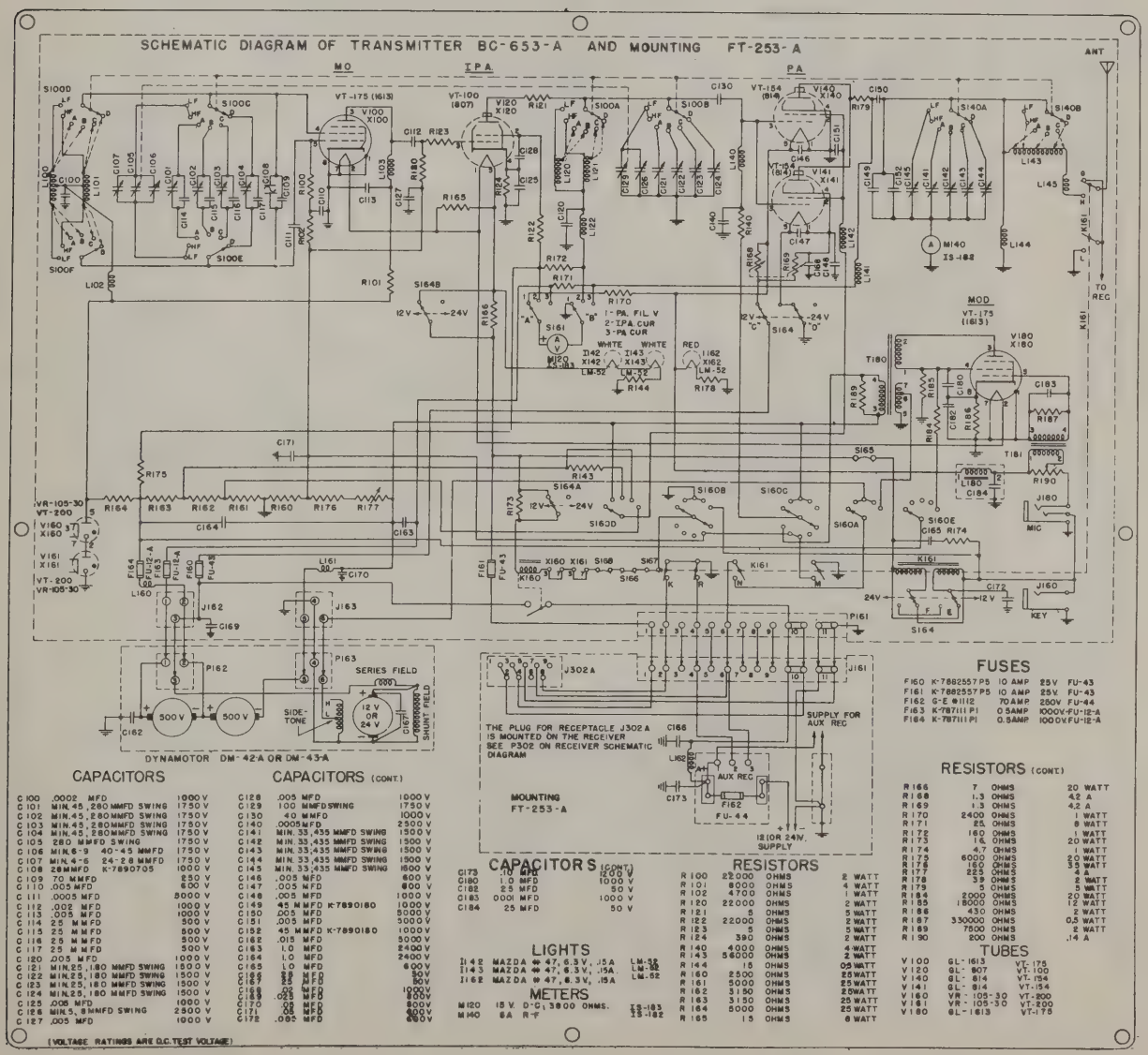
The BC-645 is an airborne IFF transceiver for 470-495 mc and transmitted either a pulse or modulated CW signal (30 kc). This unit can be converted for 420 mc ham use, rather easily. For conversion details, see CQ, December, 1956, P. 66.



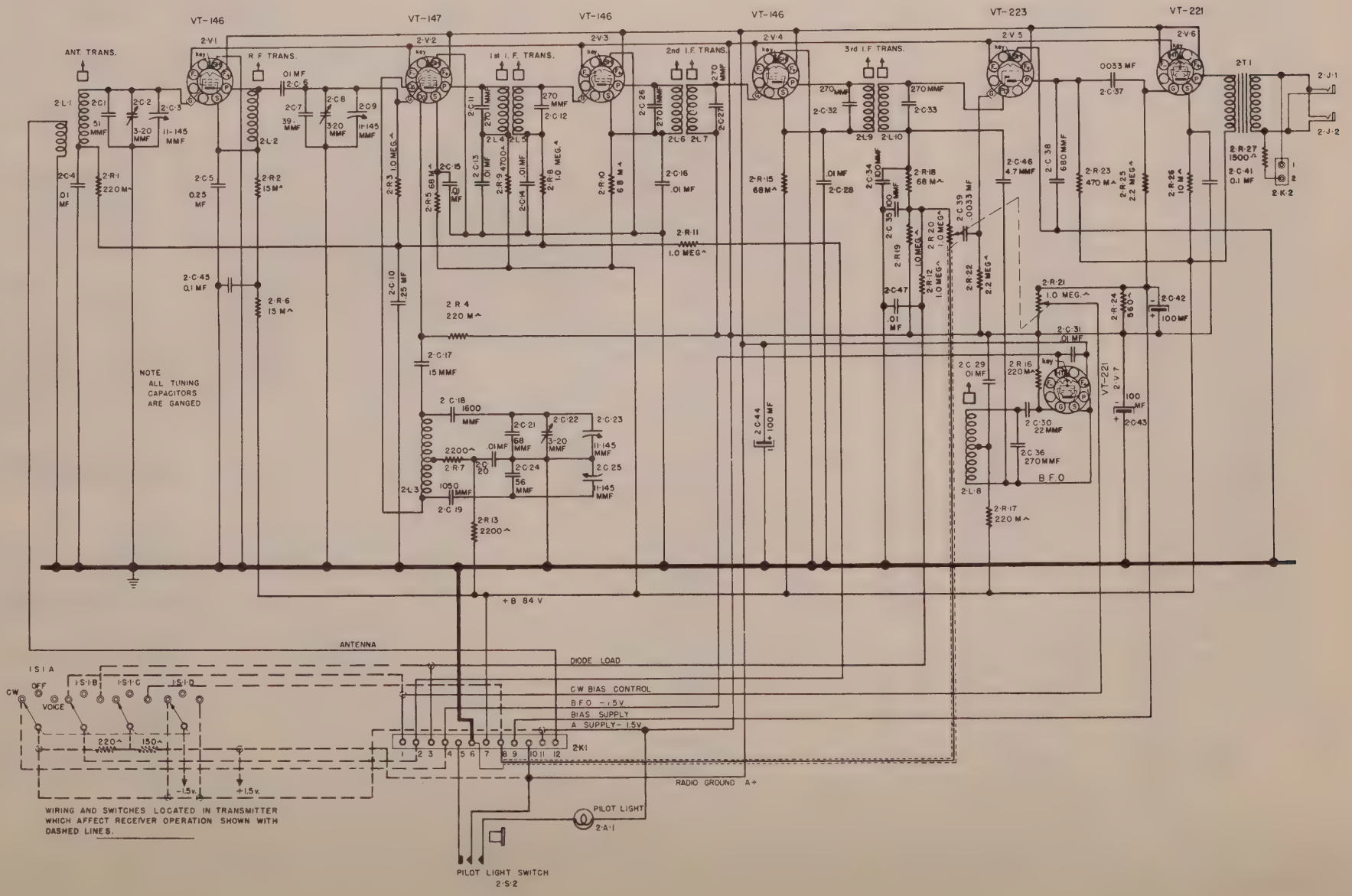
The BC-653 is a vehicular transmitter receiver operating from either 12 or 24v dc. On 12 volts the battery drain is 42 amperes while on 24 volts the drain is 30 amperes. Transmitter output is over the range of 2 to 4. 5 mc at a cw power of 50 to 90 watts. Voice power output (AM) is approximately 1/4 of this.

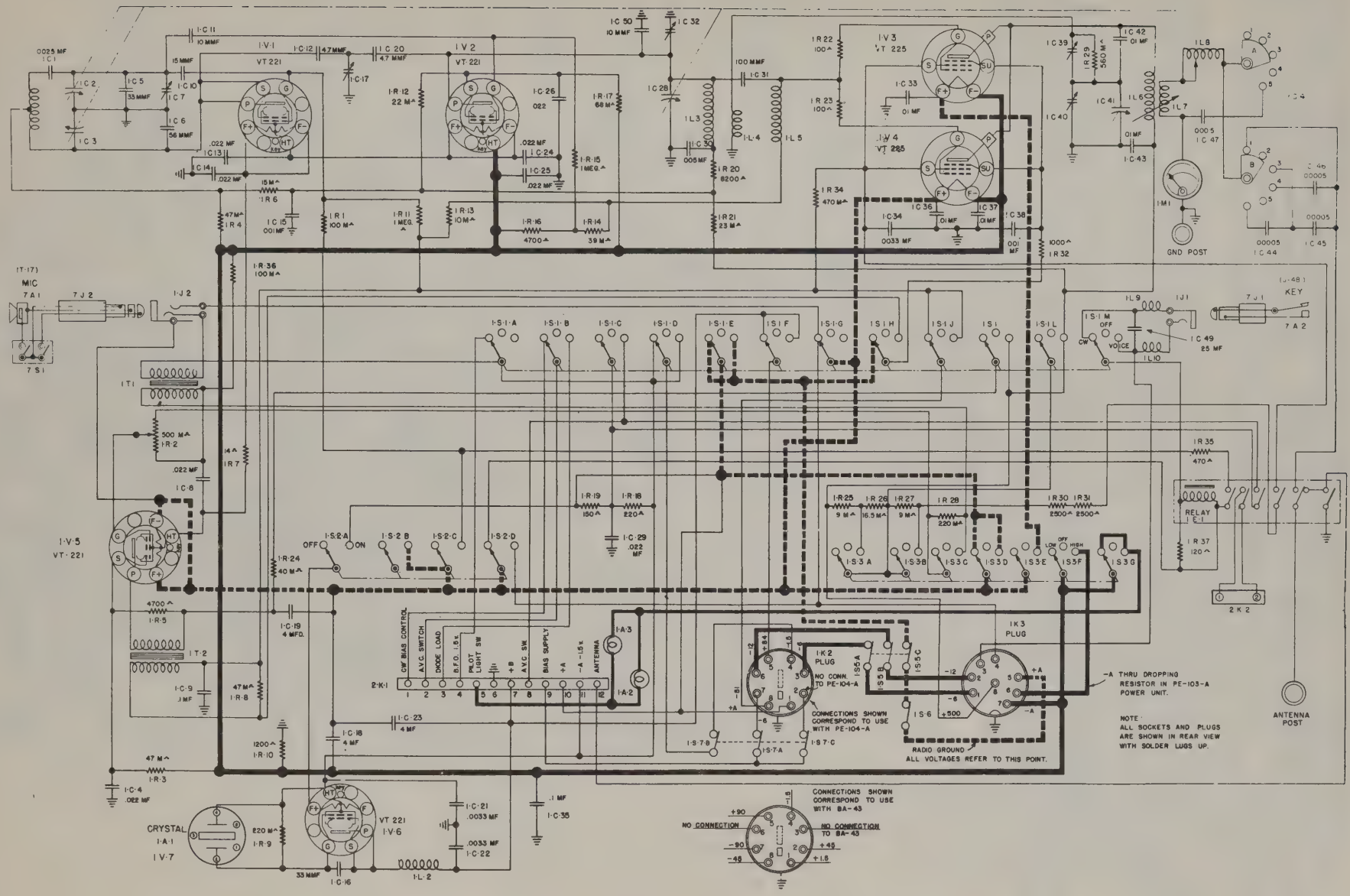
The receiver is the BC-652A and covers the range in two bands. The transmitter is the BC-653A. The antenna uses mast sections MS-49 to MS-53 inclusive and a base MP-37. A T-17 microphone is used for voice. A 200 kc crystal oscillator is built into this equipment to calibrate the transmitter. The receiver uses a 915 kc if.

This is 400 lbs of nothing. Actually, it works pretty well but takes the patience of Job to sort out the millions of tuning units.



SCR-284 (BC-654A) 3800-5800 kc transmitter-receiver, CW or AM, 17 watts. 455 kc IF. Uses PE-103A and vibrator supply for mobile use, 6 or 12 vdc.

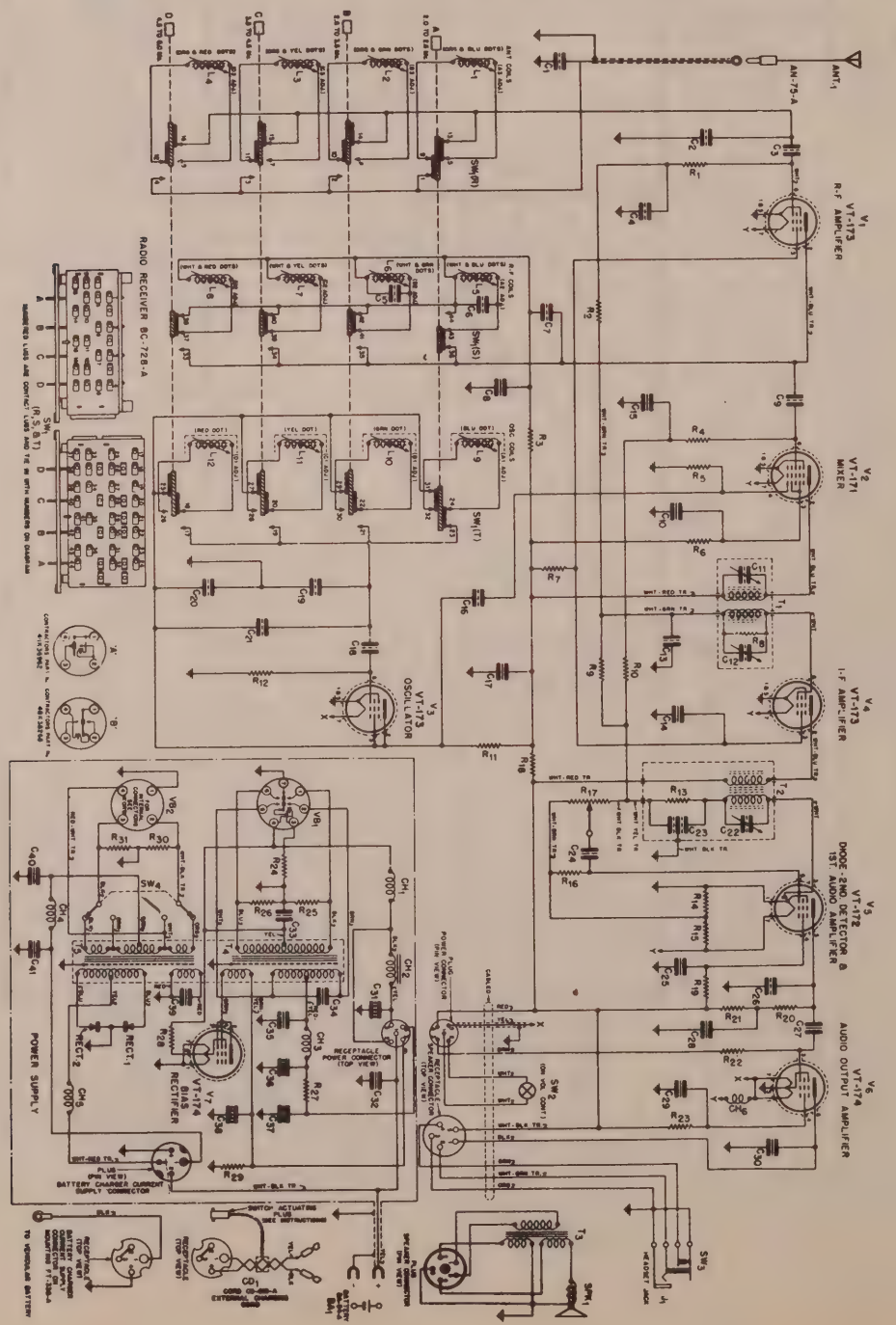



MIC
KEY
GND POST
ANTENNA POST
CRYSTAL
RELAY
VT 221
VT 225
VT 285
OFF BIAS CONTROL
AVC SWITCH
DIODE LOAD
B.F.O. I.5 K
PILOT LIGHT SW
+B
AVC SW
BIAS SUPPLY
+A
-A -1.5 K
ANTENNA
1K2 PLUG
NO CONN. TO PE-104-A
CONNECTIONS SHOWN CORRESPOND TO USE WITH PE-104-A
1K3 PLUG
-A THRU DROPPING RESISTOR IN PE-103-A POWER UNIT.
RADIO GROUND
ALL VOLTAGES REFER TO THIS POINT.
NOTE: ALL SOCKETS AND PLUGS ARE SHOWN IN REAR VIEW WITH SOLDER LUGS UP.
CONNECTIONS SHOWN CORRESPOND TO USE WITH BA-43
NO CONNECTION
NO CONNECTION TO BA-43

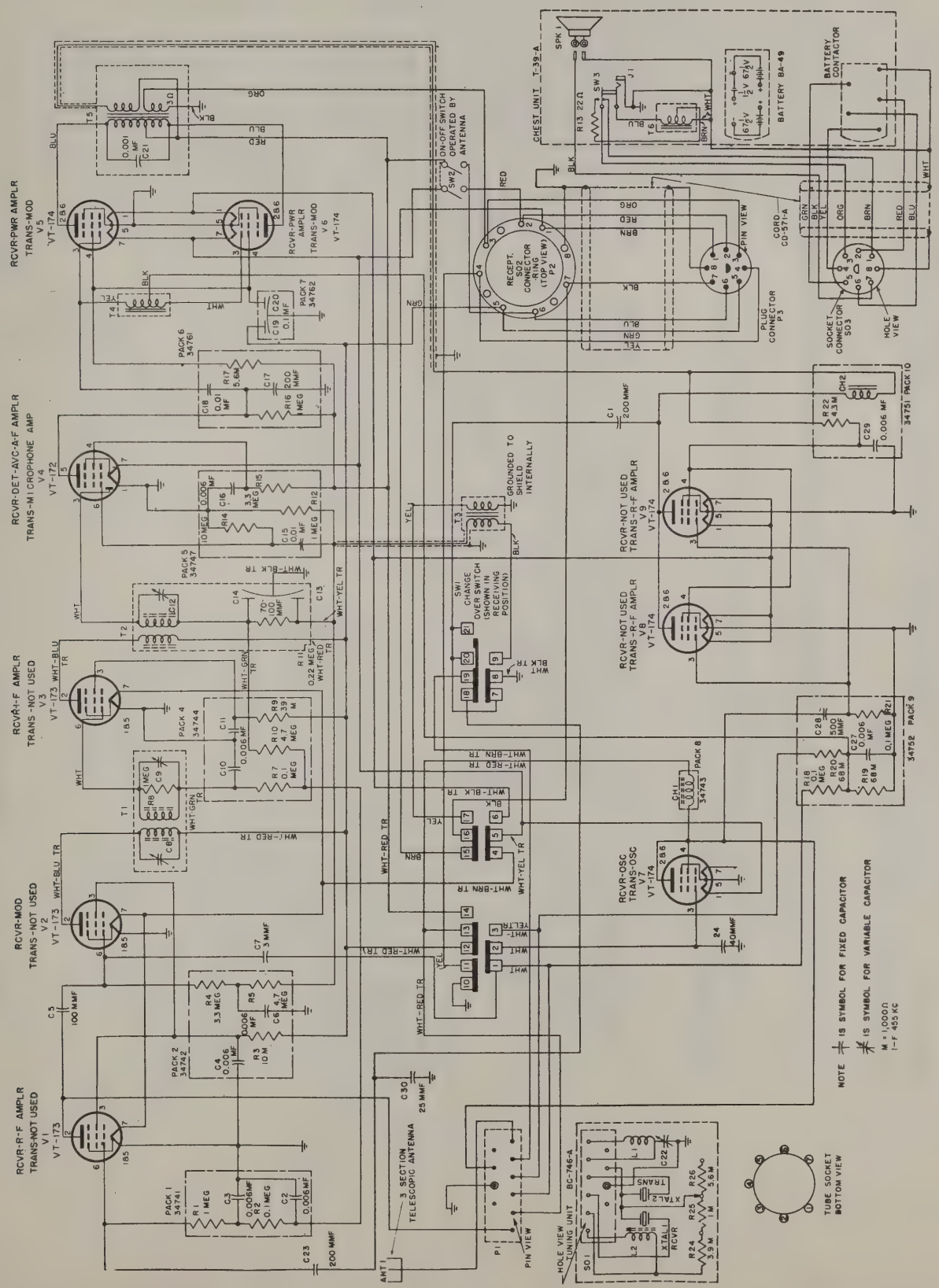
This equipment is a six tube, push-button radio receiver designed for portable or vehicular operation. It is powered by a two volt storage battery, a BB-54-A. The power supply consists of a vibrator unit complete with a recharger for the storage cell. The BC-728-A operates over a range of 2 to 6 mc on four preset frequencies chosen by the operators selection of appropriate push buttons.

Button A has a possible range of 2.0 to 2.6 mc, button B covers 2.6 to 3.5 mc, button C covers 3.5 to 4.5 mc, and button D covers 4.5 to 6 mc. The receiver operates with AM signals and has an intermediate frequency of 455 kc.

An external whip type antenna, AN-75-A is used with the equipment and a jack is provided for earphone operation when desired. A loudspeaker is normally used with this equipment, and it is mounted within the case of the BC-728-A.



The BC-745, a small transmitter-receiver known as the "Horsey-Talky" covers 2-6 mc crystal controlled. The receiver has an IF at 455 kc, and the transmitter is grid modulated. Power under 1 watt. Power: Filament, 1.5 v, Plate, 67 volts receiver; 120 v transmitter

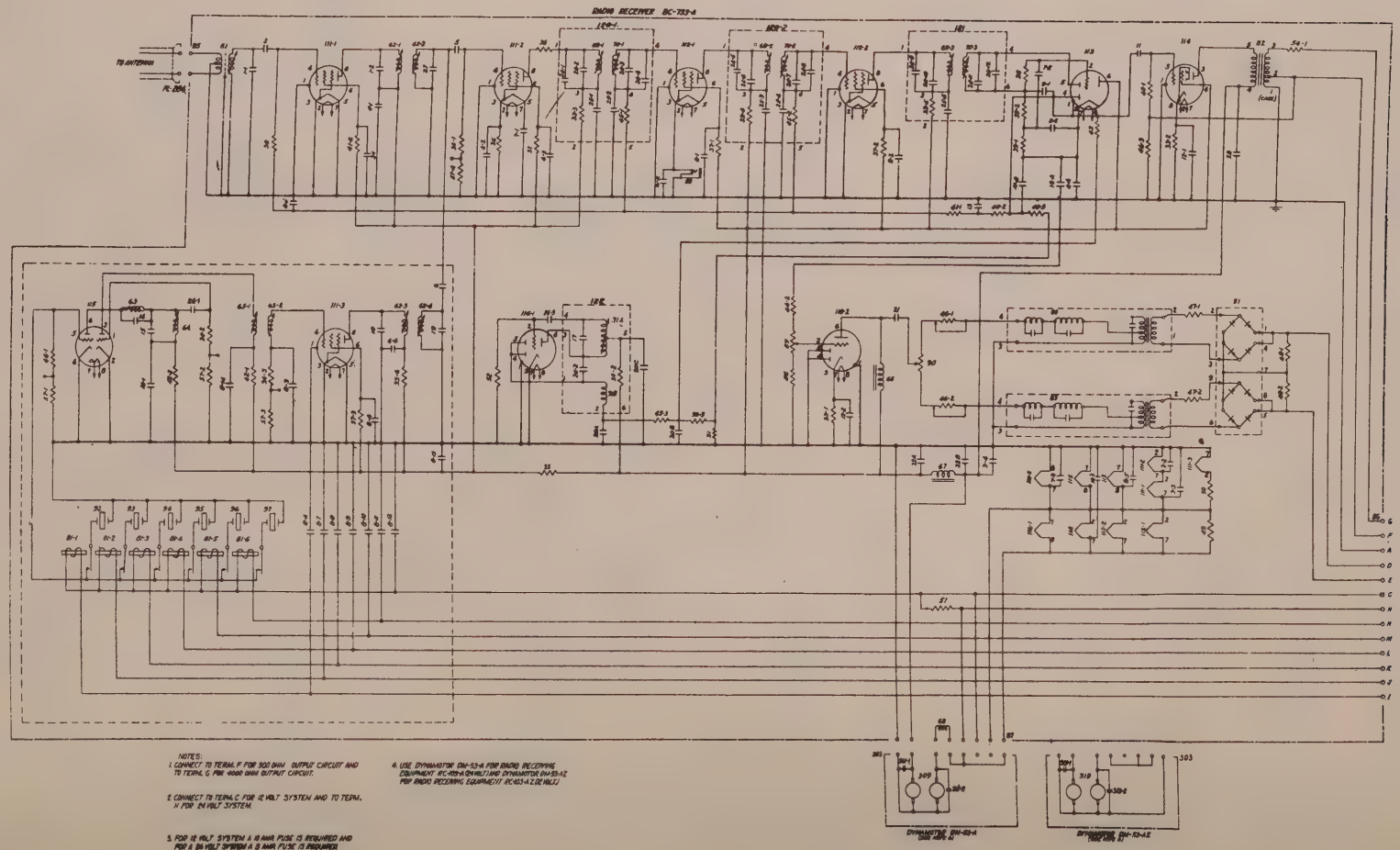

RCVR-PWR AMPLR TRANS-MOD V5 VT-174
RCVR-PWR AMPLR TRANS-MOD V6 VT-174
RCVR-DET-AVC-A-F AMPLR TRANS-MICROPHONE AMP V4 VT-172
RCVR-NOT USED TRANS-R-F AMPLR V9 VT-174
RCVR-NOT USED TRANS-R-F AMPLR V8 VT-174
RCVR-A-F AMPLR TRANS-NOT USED V3 VT-173
RCVR-MOD TRANS-NOT USED V2 VT-173
RCVR-OSC TRANS-OSC V7 VT-174
RCVR-R-F AMPLR TRANS-NOT USED V1 VT-173
CHEST UNIT T-39-A
BATTERY CONTACTOR
BATTERY BA-49
ON-OFF SWITCH OPERATED BY ANTENNA
RECEPT. TUBE CONNECTOR RING (TOP VIEW) P2
PIN VIEW
PLUG CONNECTOR P3
CORD CD-571-A
SOCKET CONNECTOR SO3
HOLE VIEW
GROUNDED TO SHIELD INTERNALLY
SW1 CHANGE OVER SWITCH SHOWN IN RECEIVING POSITION
3 SECTION TELESCOPIC ANTENNA
ANT1
TUNING UNIT BC-746-A
TUBE SOCKET BOTTOM VIEW
NOTE ÷ IS SYMBOL FOR FIXED CAPACITOR
* IS SYMBOL FOR VARIABLE CAPACITOR
M = 1,000Ω
I-F 455 KC

BC-733

The BC-733 is a crystal controlled receiver for aircraft navigational purposes. It operates in the 108.3 to 110.3 mc band and has a 6.9 mc I. F. The input power is 12 or 24 volts.

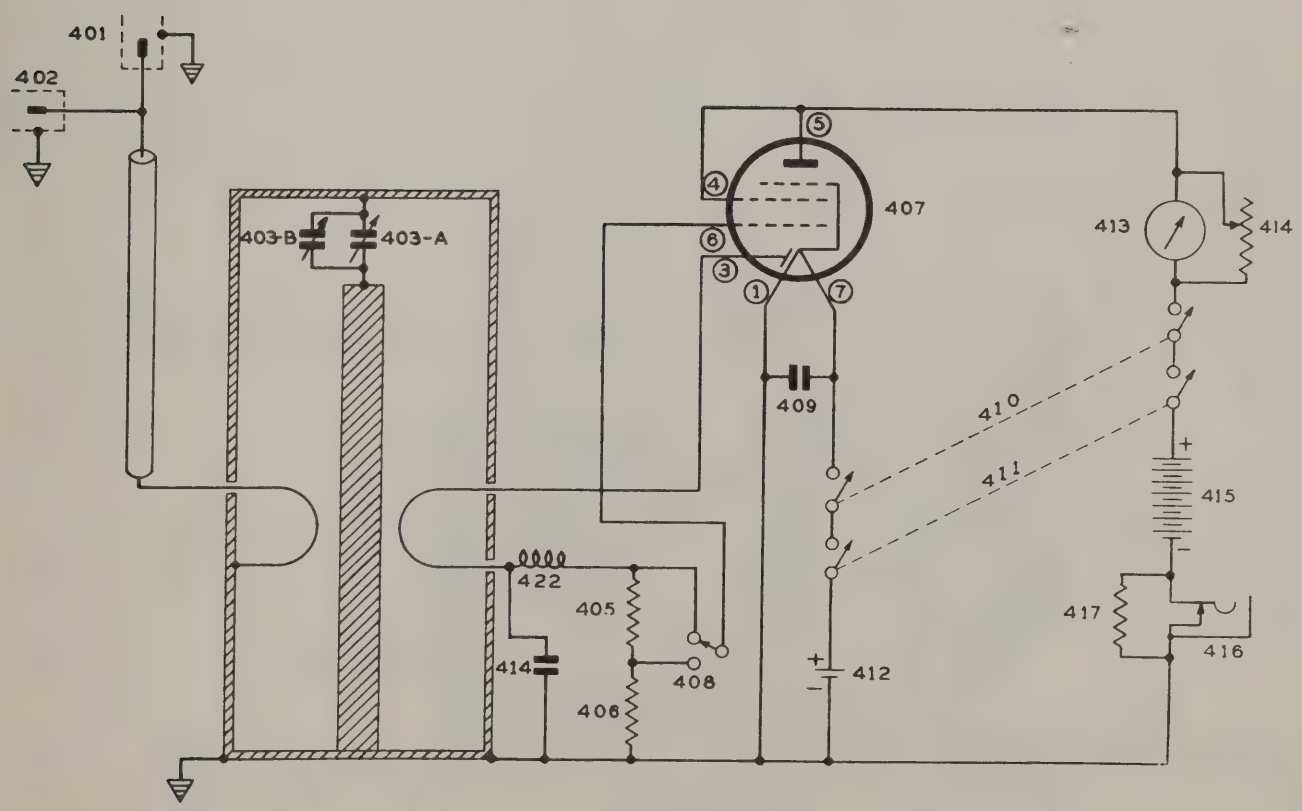
This converts easily to two meters. The 90 and 150 cycle filters can be used for many experimental purposes.

The BC-733 can also be converted to receive signals from U.S. space satellites on 108 mc.



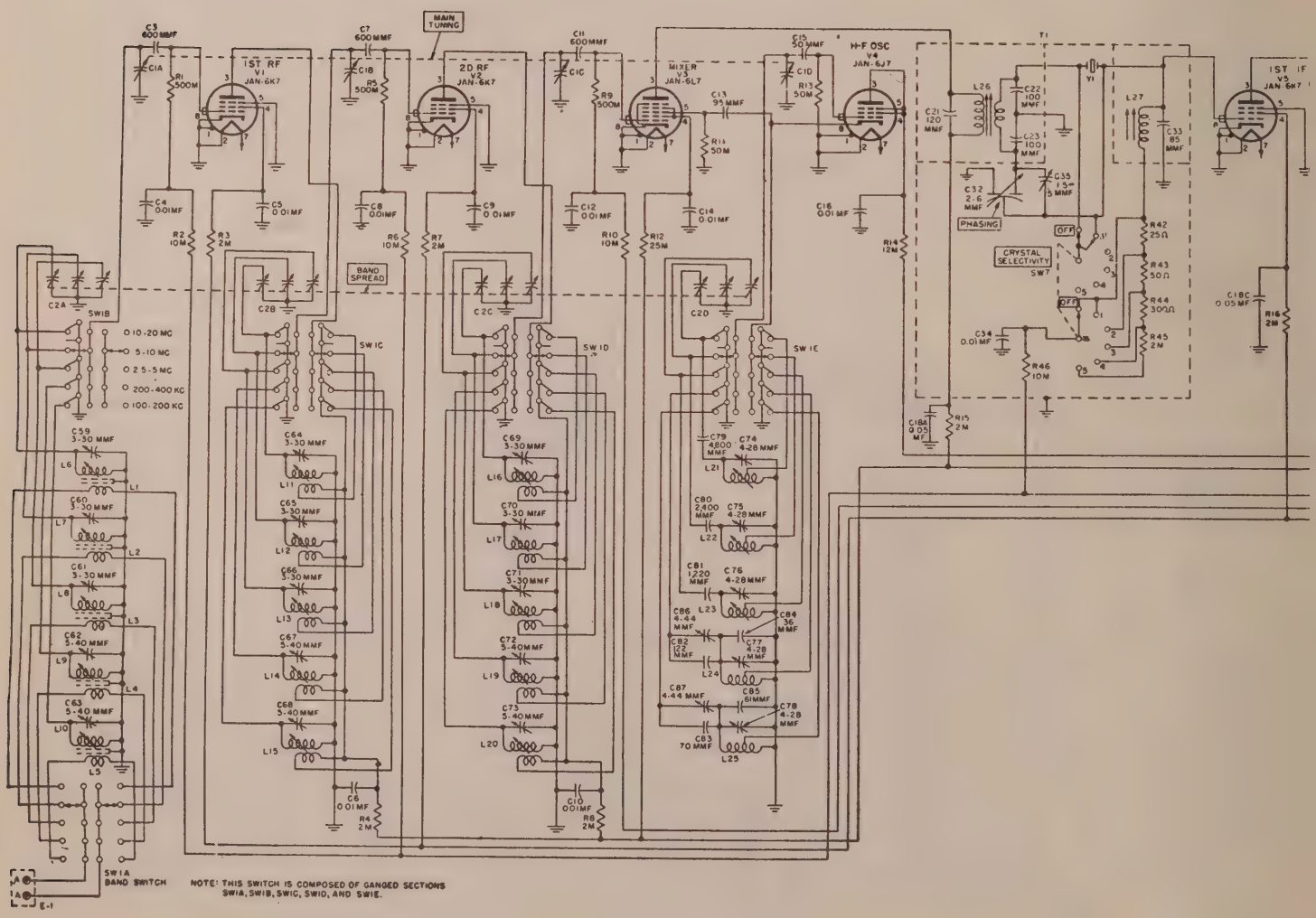
BC-906

The BC-906-C is a frequency meter of the absorbtion type. The BC-906 is housed in a metal case with a door to protect the dial, meter and switches, but which also serves as a housing for the calibration chart and the antenna. In use the antenna is plugged into the socket located through a hole at the top of the case. The sensitivity of the meter depends upon the length to which the antenna is extended and the antenna should be adjusted in length to maximum sensitivity. The frequency range of the BC-906 is 150 to 225 mc. The detection is accomplished by a diode section of a1S5, the pentode section of that tube acting as a meter amplifier. The required voltages are 1.5 volts for the filament, and 45 volts for the plate supply.

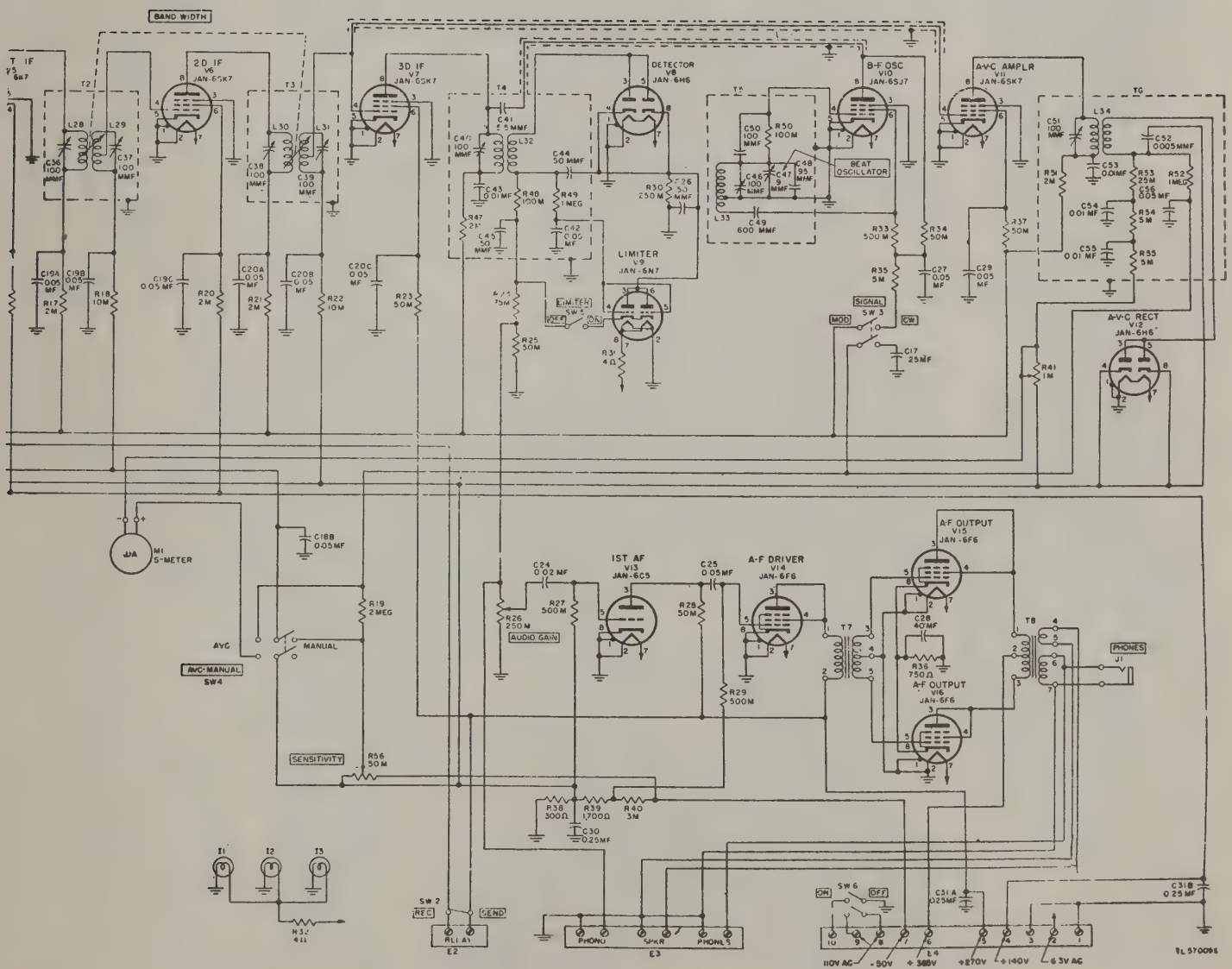


BC-779, 794, 1004

This is the military version of the Hammarlund Super-Pro. 455 kc IF. These receivers normally use a separate power supply, or may be battery operated .Six, 45 volt batteries are used, 5 for the plate, 1 for bias. The filament uses a 6 volt battery.

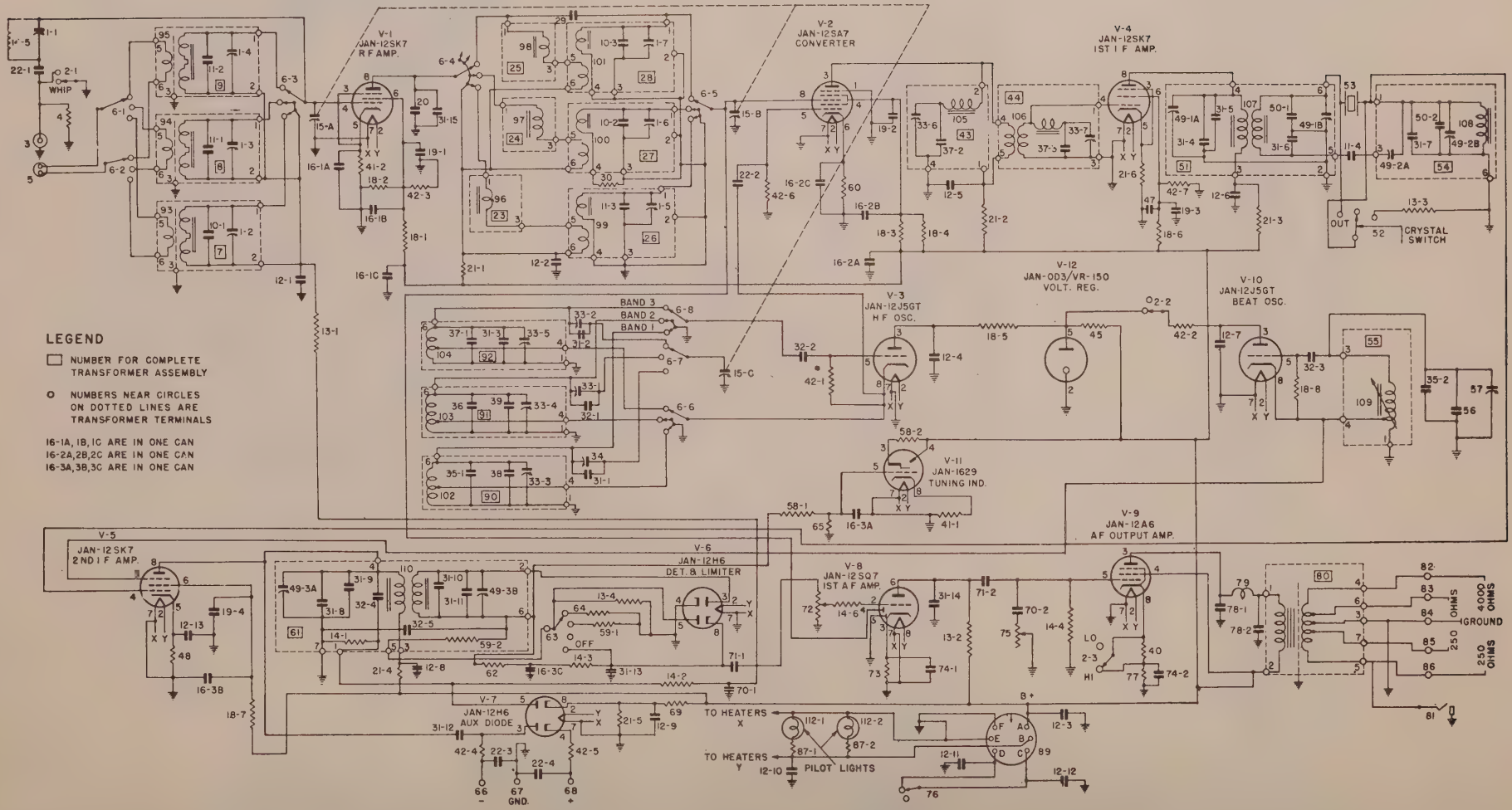


Model	Commercial Equivalent	Frequency Range
BC-779	SP-210-LX, SP-200-LX	0.1-0.4, 2.5-20 mc
BC-1004	SP-210-X, SP-200-X	0.54-20 mc



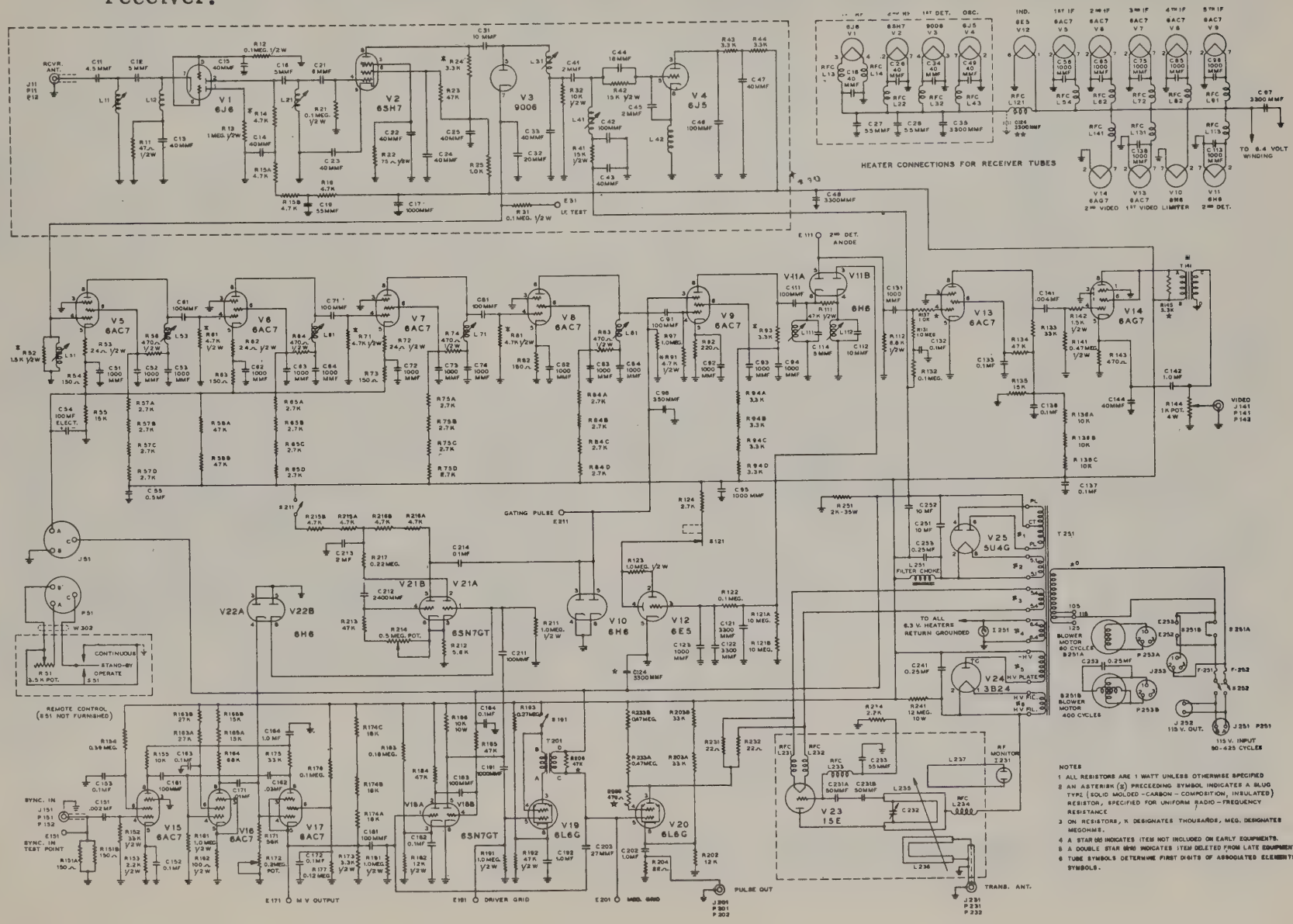
BC-969A

The BC-969A is a superheterodyne receiver covering the VLF band of 15 to 150 kc. The intermediate frequency is 455 kc. Power is supplied by an AR-61A supply or a PE-223. It may be operated on any power supply producing 12 volts at 2 amperes and 250 volts at 120 ma dc. The receiver employs a BFO, noise limiter, crystal filter, AVC and uses a VR tube for oscillator stability.

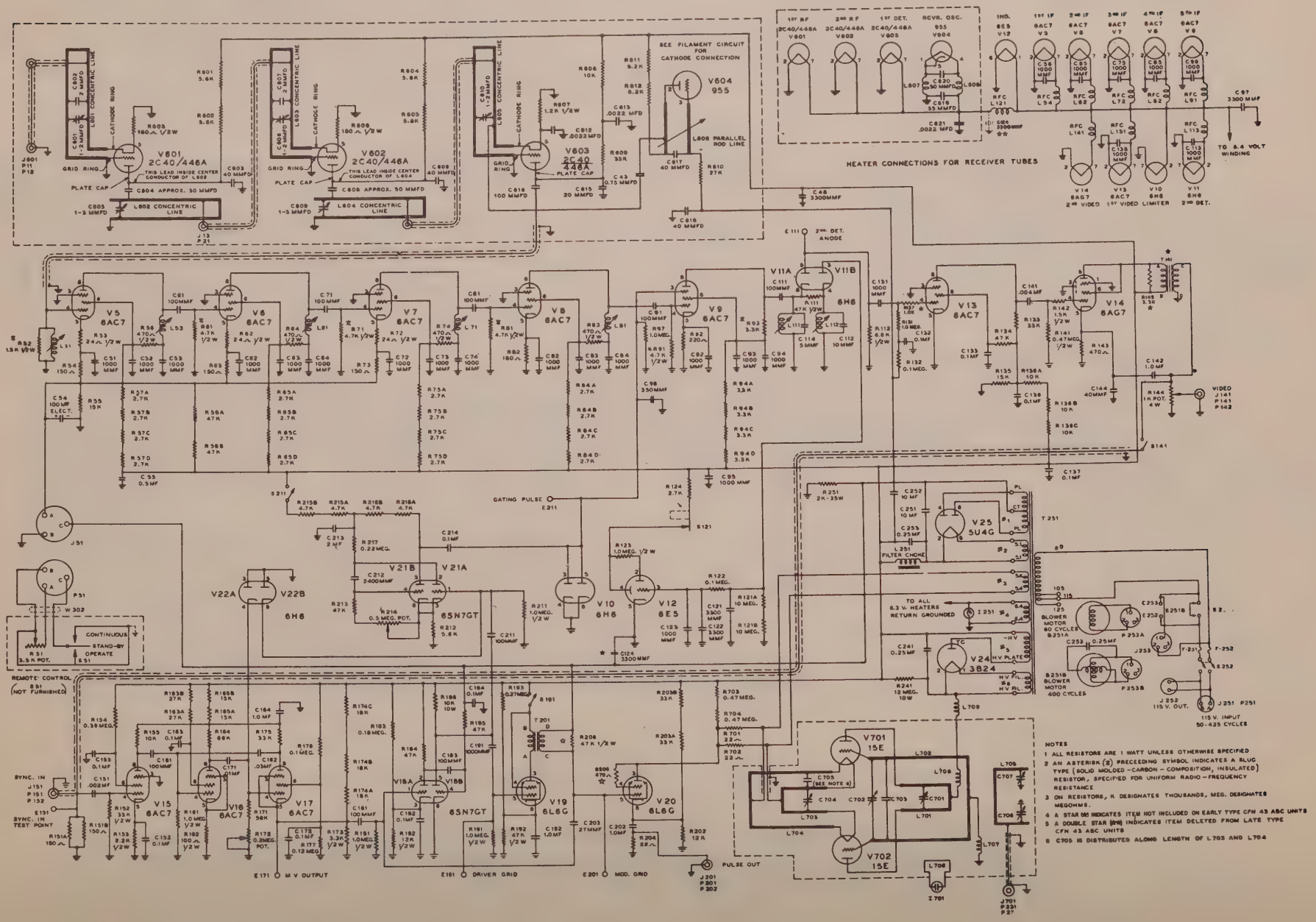


The BN is an IFF transmitter receiver operating in the 157 to 187 mc band. It is designed to operate from 110V 60 cycles. Some models may have been modified to 400 cycles by a change in the blower motor only. The receiver is of the super-heterodyne type using a wide band IF covering 28 to 32 mc. The output of the IF is detected and amplified by a video amplifier with a response from 100 cps to 200 kc.

The RF section has found much use as a converter for 2 meters to a 26 to 30 mc receiver.


HEATER CONNECTIONS FOR RECEIVER TUBES
TO 6.4 VOLT WINDING
GATING PULSE
REMOTE CONTROL (651 NOT FURNISHED)
CONTINUOUS
STAND-BY
OPERATE
TO ALL 6.3 V. HEATERS RETURN GROUNDED
BLOWER MOTOR 60 CYCLES
BLOWER MOTOR 400 CYCLES
115 V. INPUT 50-425 CYCLES
VIDEO
PULSE OUT
TRANS. ANT.
NOTES
1 ALL RESISTORS ARE 1 WATT UNLESS OTHERWISE SPECIFIED
2 AN ASTERISK (*) PRECEEDING SYMBOL INDICATES A SLUG TYPE (SOLID MOLDED - CARBON - COMPOSITION, INSULATED) RESISTOR, SPECIFIED FOR UNIFORM RADIO-FREQUENCY RESISTANCE
3 ON RESISTORS, K DESIGNATES THOUSANDS, MEG. DESIGNATES MEGOHMS.
4 A STAR (*) INDICATES ITEM NOT INCLUDED ON EARLY EQUIPMENTS.
5 A DOUBLE STAR (**) INDICATES ITEM DELETED FROM LATE EQUIPMENT
6 TUBE SYMBOLS DETERMINE FIRST DIGITS OF ASSOCIATED ELEMENTS SYMBOLS.

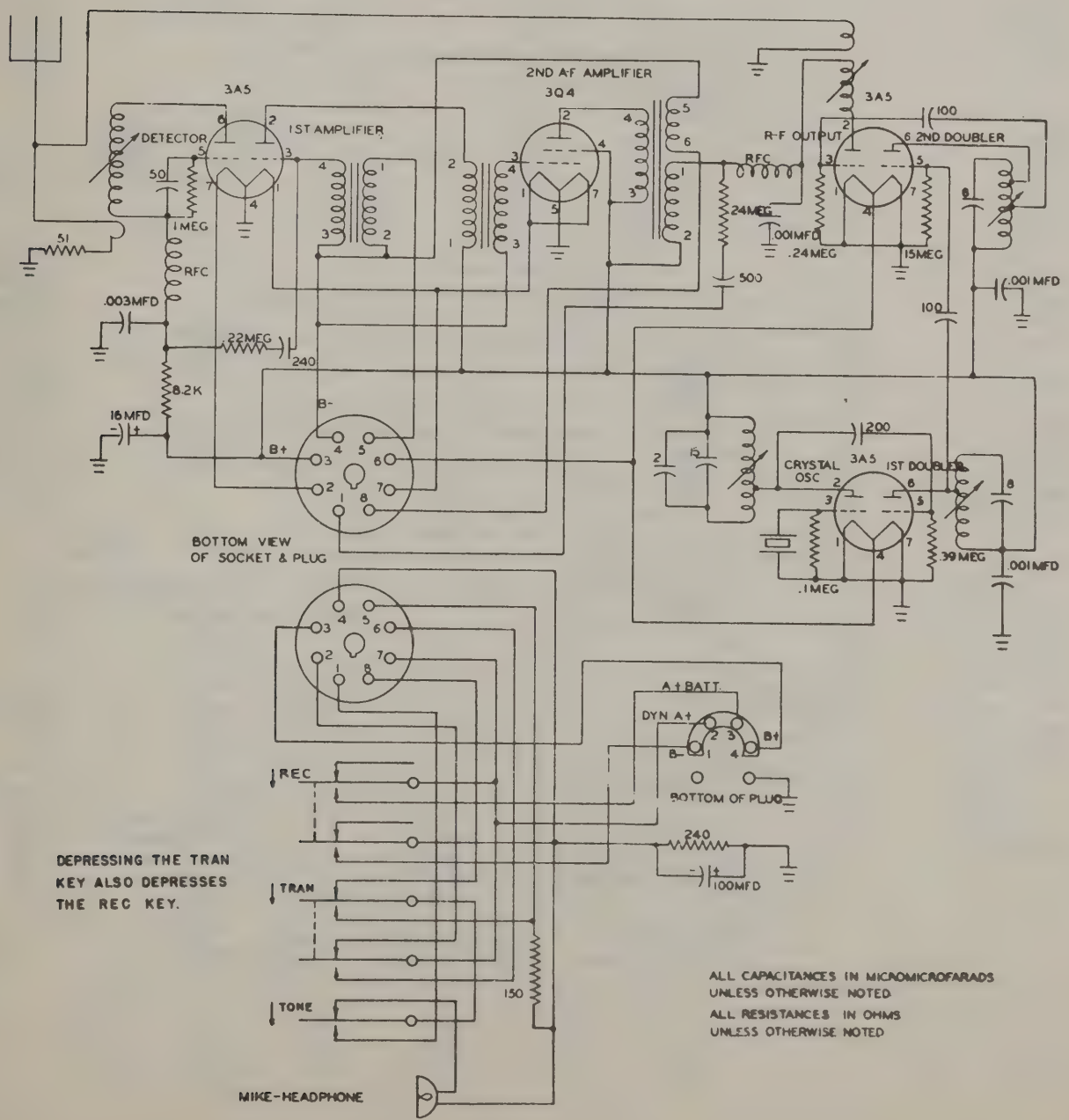
The BP is an IFF equipment very similar in operation, but highly improved over the BN equipment. The primary difference being in the transmitter and receiver RF circuits.



CRC-7

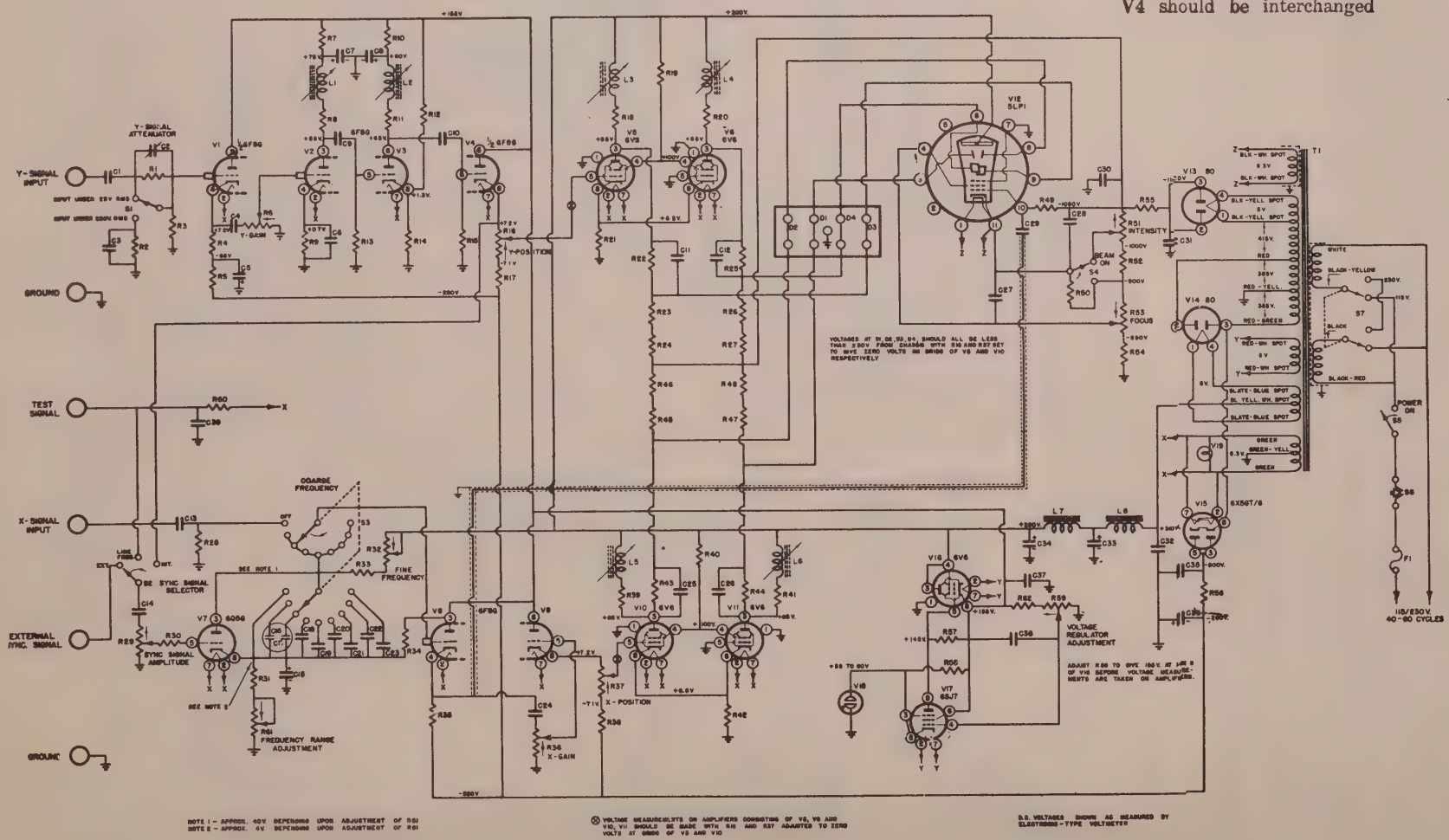
The AN/CRC-7 is a hermetically sealed transceiver with a watertight battery compartment. Transmission is on MCW or AM. Originally designed for operation at 140. 58 mc the hermetically sealed portion may be opened and the crystal changed and the coils trimmed to the 2 meter band. The crystal should be in the 18 mc band for multiplication factor of 8 times. The stages should be tuned with the antenna fully extended.

The microphone also serves as headset on receive. Power is switched by turning the appropriate filament switching. See conversion CQ-April '58.



Often available in surplus is the 208 oscilloscope. The vertical input impedance is 5 megohms shunted by 5 mmf while the horizontal input is 2 megohms shunted by 30 mmf. The response is 2 cps to 100 kc. The sweep range is 2 cps to 50 kc.

Pin connections of V1 and V4 should be interchanged

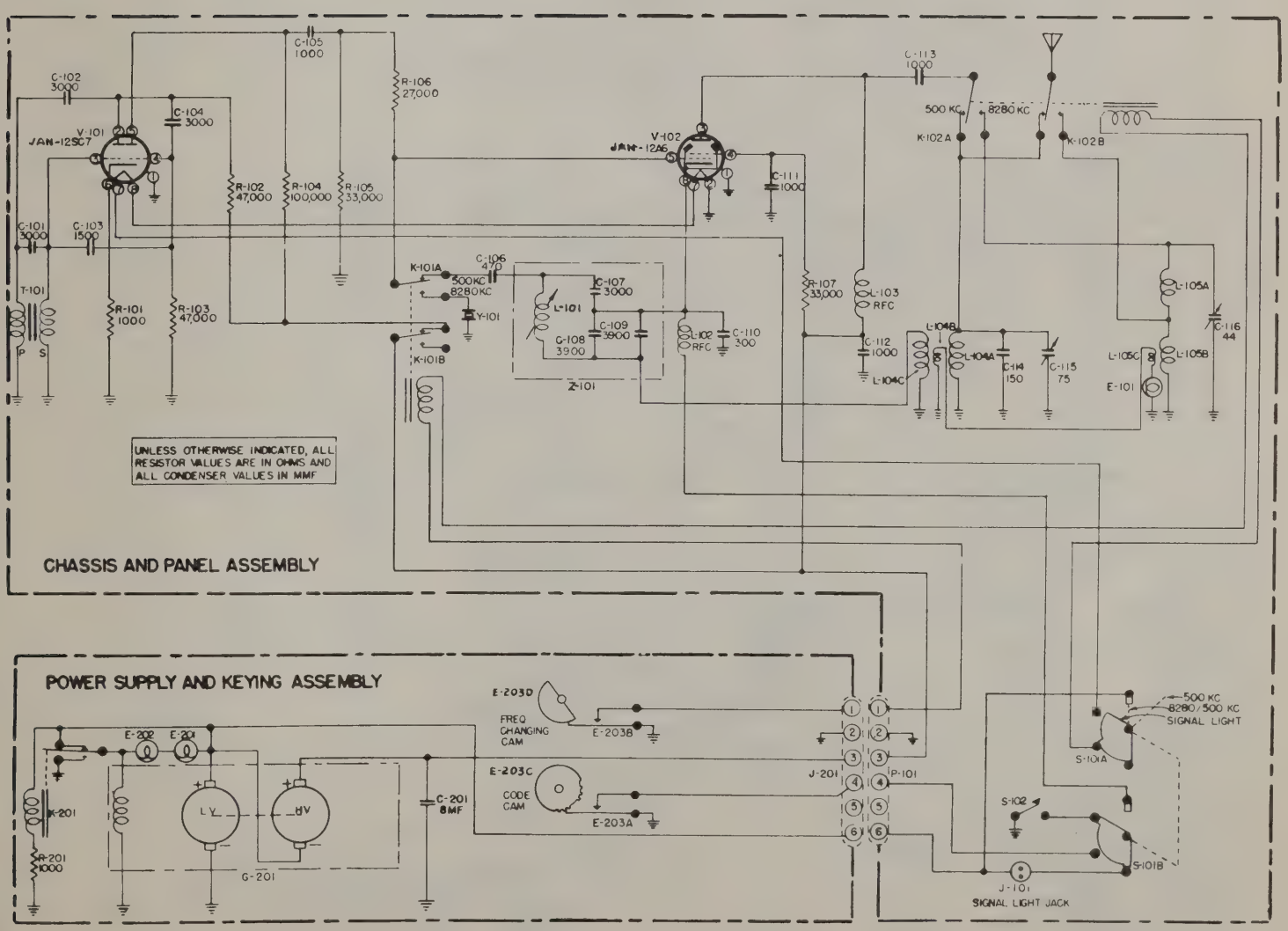


SCHEMATIC OF CIRCUIT

TYPE 208
CATHODE-RAY OSCILLOGRAPH
DD-825-D-5

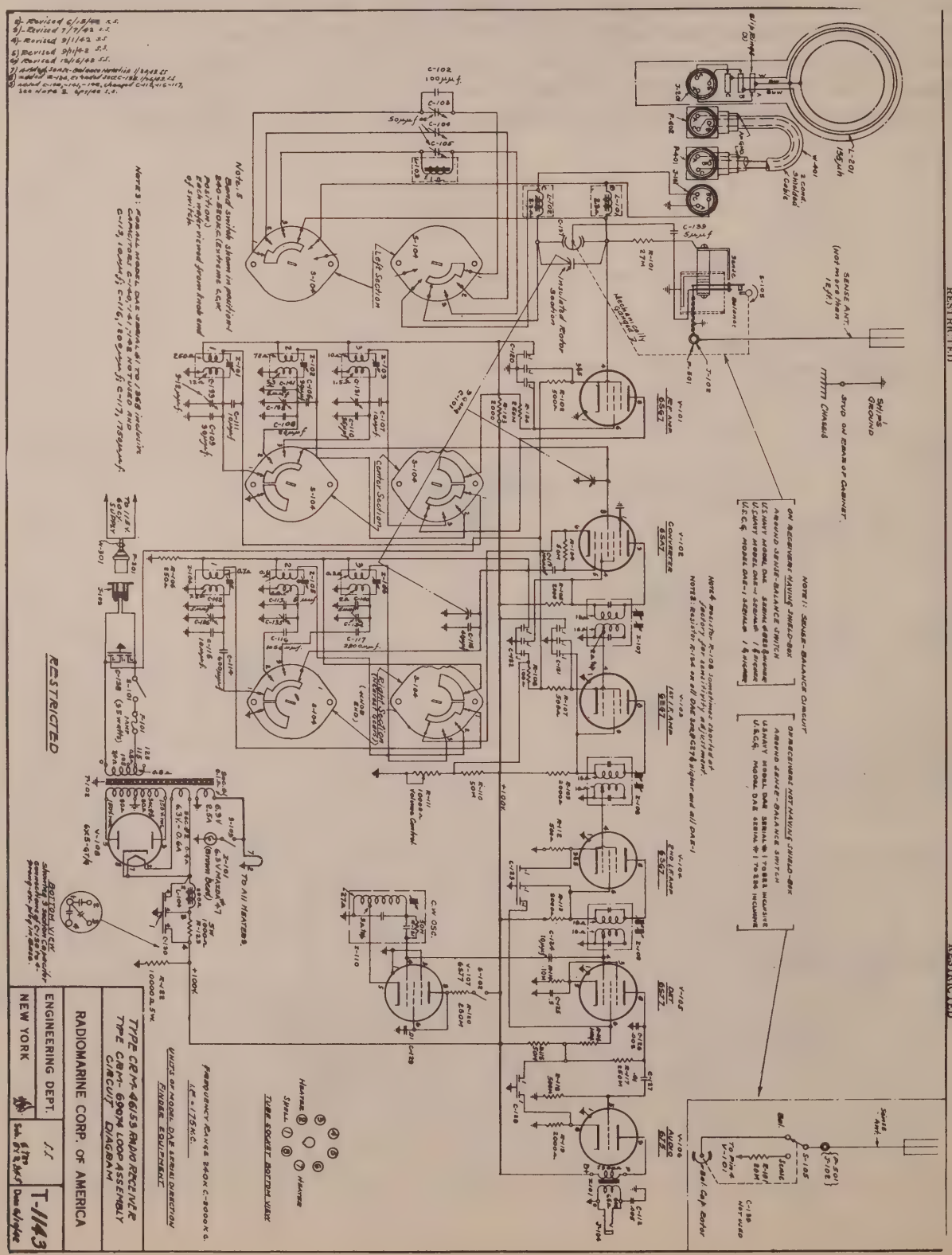
CRT-3

The Gibson Girl transmitter is also known as the AN/CRT-3 because of its similarity to the cathode ray tube shape. It is a transmitter producing 2 1/2 watts on 500 kc and 2 watts in 8280 kc both of which are international distress frequencies. It is normally carried in lifeboats or with other survival equipment. In operation it is held between the operator's legs and the hand crank is turned. A series of coded signals used to key the transmitter are developed by the crank rotation. A generator is operated simultaneously to supply filament and plate power to the transmitter. Power is also supplied to a visual lamp for night operation. The antenna is held aloft by either a kite or a balloon provision being made to generate hydrogen for balloon inflation. Hand keying is possible.



DAE

The DAE is a direction finder. It is a superheterodyne receiver covering the frequency range of 240 to 2000 kc. The input power is 115 volts 60 cps although accessories are available for inputs of 24, 32 or 115 volts DC. The direction finder loop is separate from the receiver for installations aboard ship. The intermediate frequency is 175 kc. The input is from the loop and sense antenna. The output is to head phones of 600 ohm impedance. A BFO is provided for CW reception, but no AVC is available.

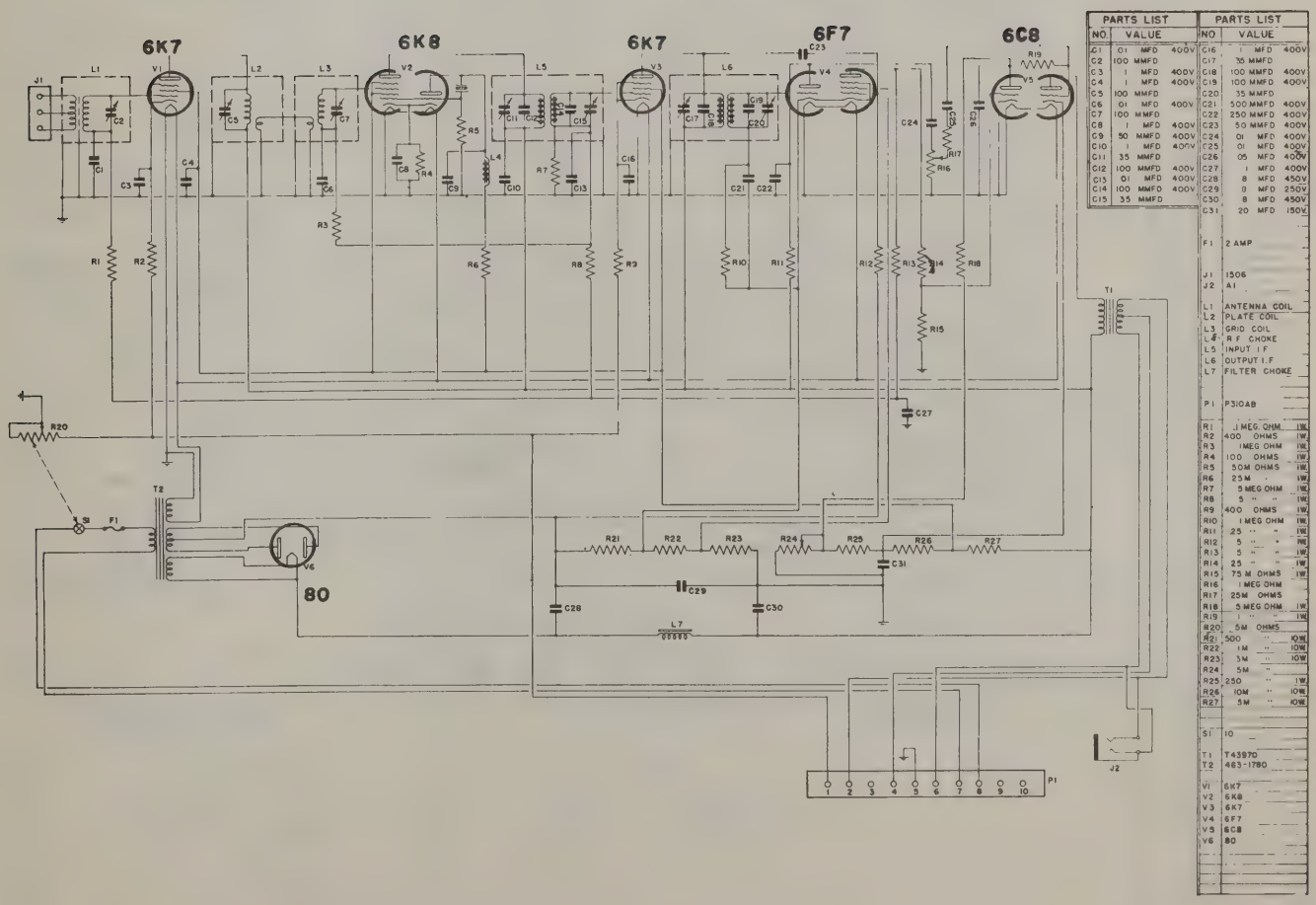


F-3

The Wilcox F-3 (ARC-3) receiver is a rack-mounted fixed frequency receiver covering the range of 1900 to 16500 kc range. Some models may cover different frequencies from these in standard groups.

Group 1	1900 to 3600 kc
Group 2	3100 to 6100 kc
Group 3	5100 to 10000 kc
Group 4	8100 to 16500

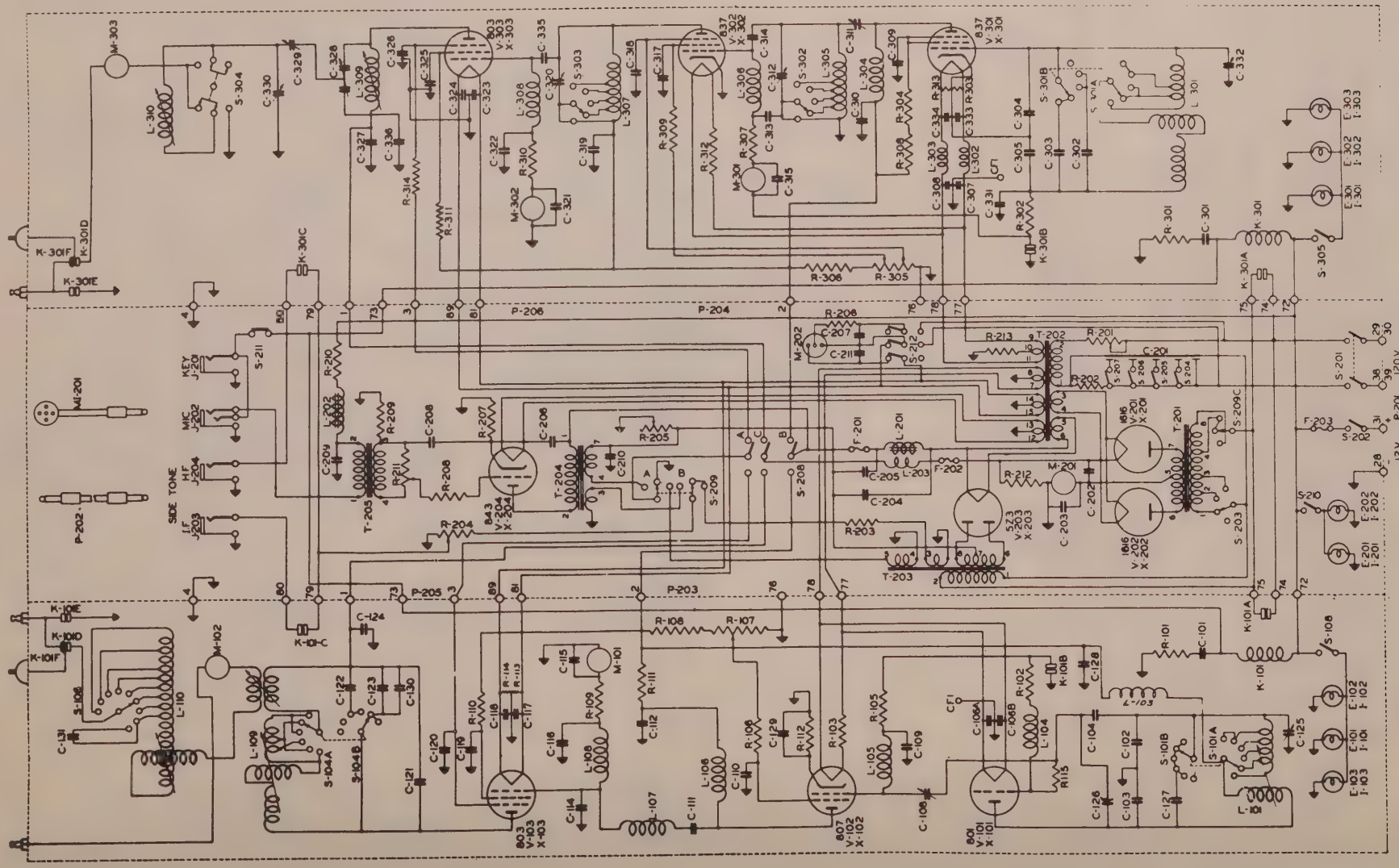
The F-3 is a superheterodyne using a crystal controlled oscillator and has a 455 kc IF. AVC and a Morse suppressor are provided.



GO-9

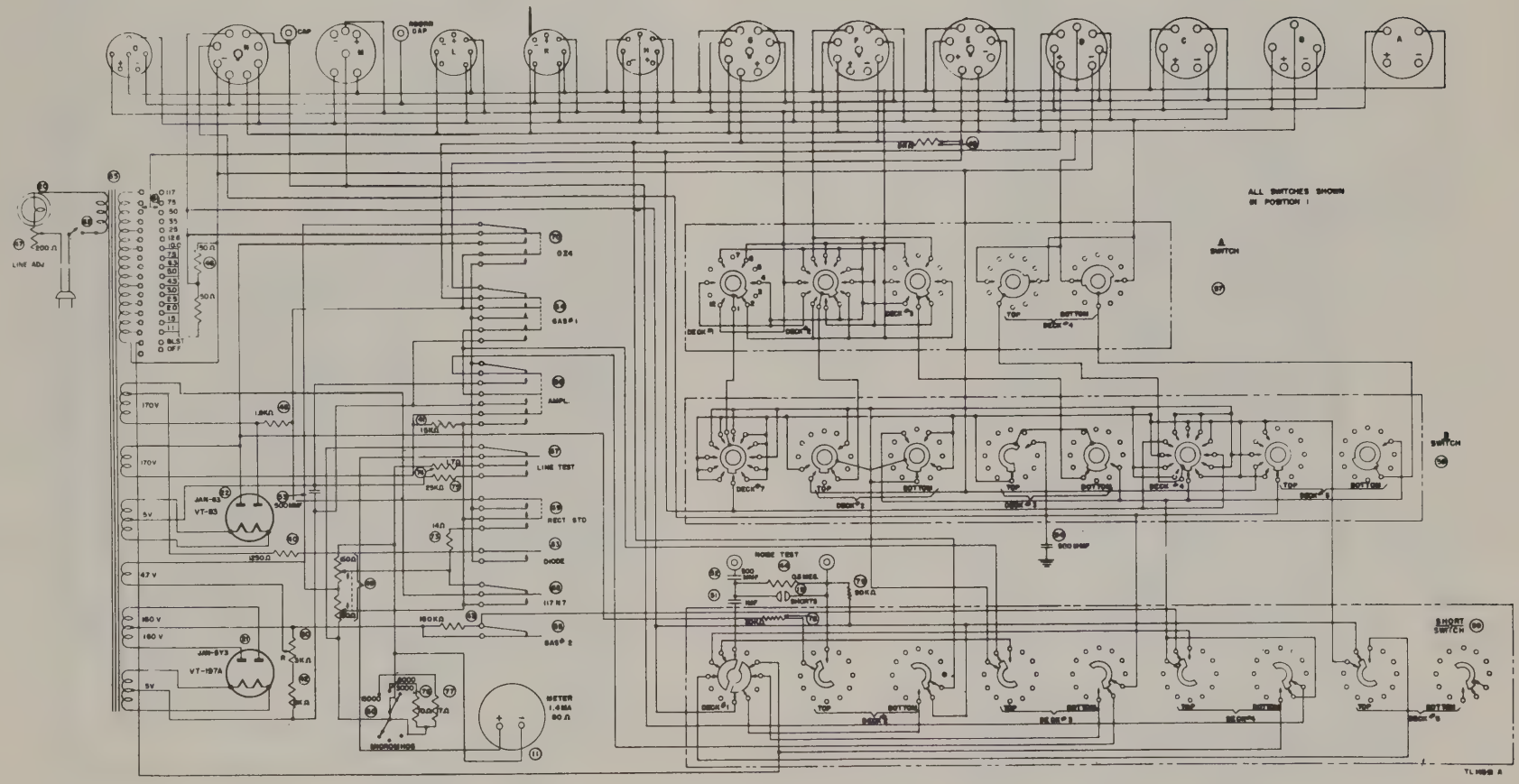
The GO-9 is a Naval Airforce transmitter for use on patrol aircraft.. It is rated at 100 watts and covers a frequency range of 300 to 600 kc and 3.0 to 18.1 mc. The equipment is constructed in three side-by-side sections, the middle one being a power distribution section. Input power is 110V 800 cps, and either 12 or 24 volts dc.

The TBW is very similar to the GO-9.



I-177

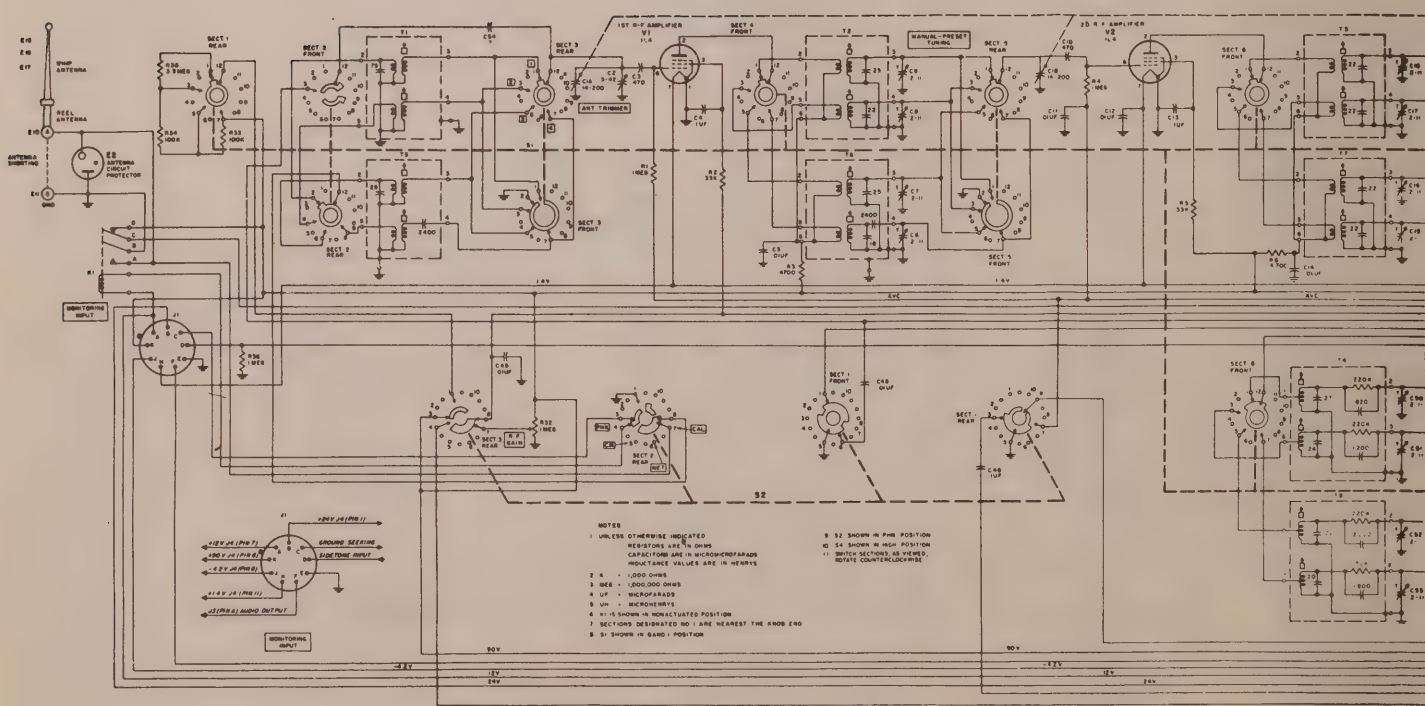
The I-177 is a transconductance type tube-tester (part of test set I-56-K). An adapter can easily be made for testing the newer tubes (Noval based 9 pin) See September, 1959 CQ for more data.

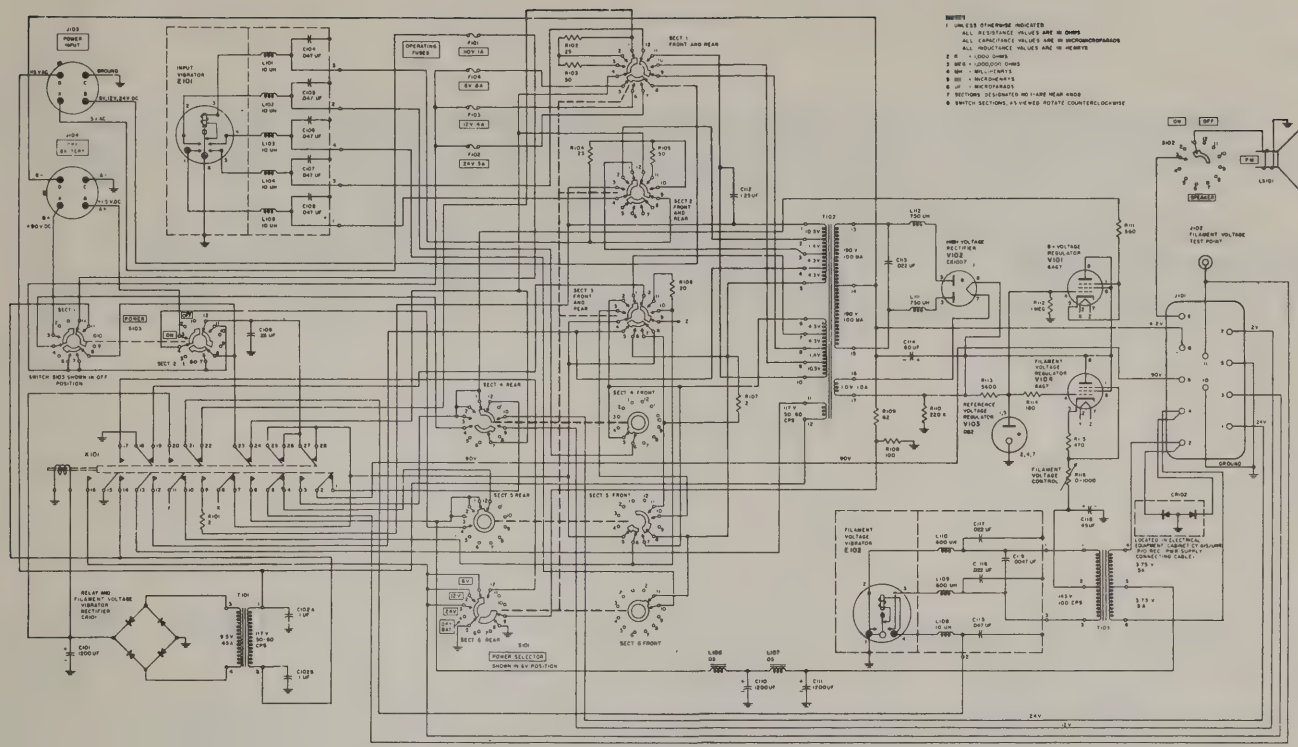


AN/GRR-5

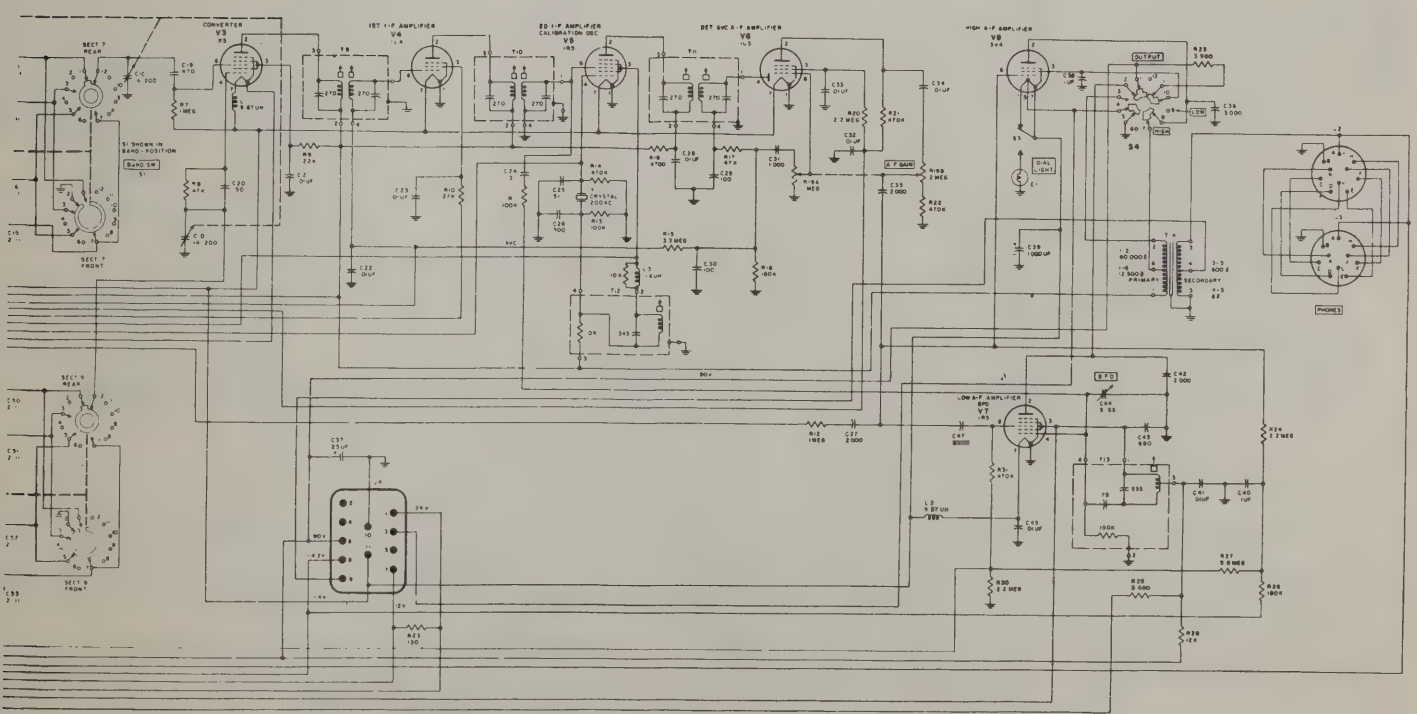
The AN/GRR-5 is a mobile radio receiver used for tactical purposes. It may be used with its internal speaker, or with handsets or other equipment. It covers a frequency range of 1.5 mc to 18 mc. It can operate from 6, 12 or 24 volts dc for mobile use, 115 volts 60 cycles for fixed use or from 1.5 volts at 350 ma and 90 volts at 27 ma for portable use. It is capable of reception of AM, CW, MCW. Provision is made for ten preset frequencies, although the equipment is capable of continuous tuning. A built in crystal calibrator supplies a check point every 200 kc. The intermediate frequency is 455 kc.

The equipment is divided into two sections. The receiver proper is known as the Radio Receiver R-174/URR while the power supply is known as the Power Supply PP-308/URR.





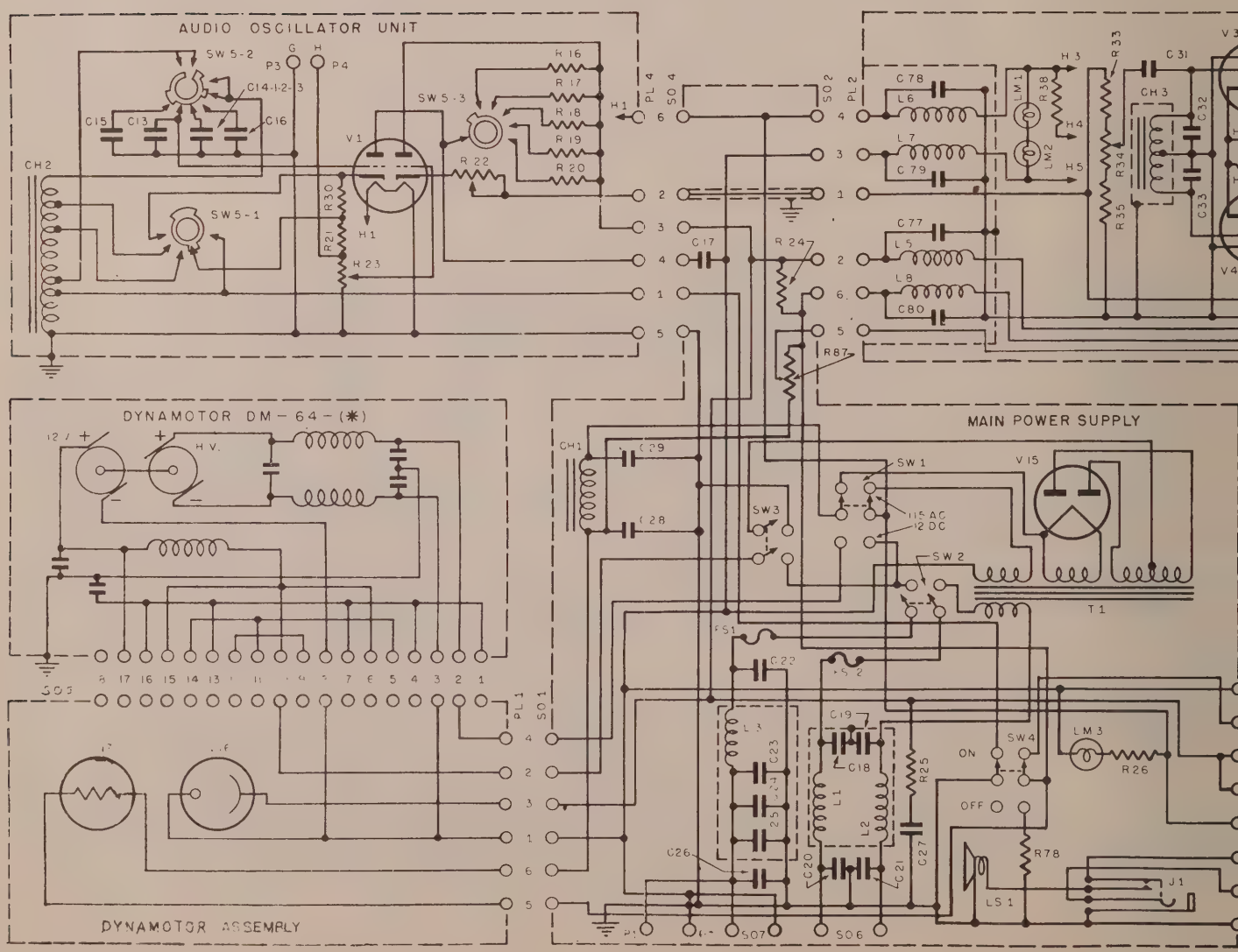
Power Supply PP-308/URR, schematic diagram.



I-208

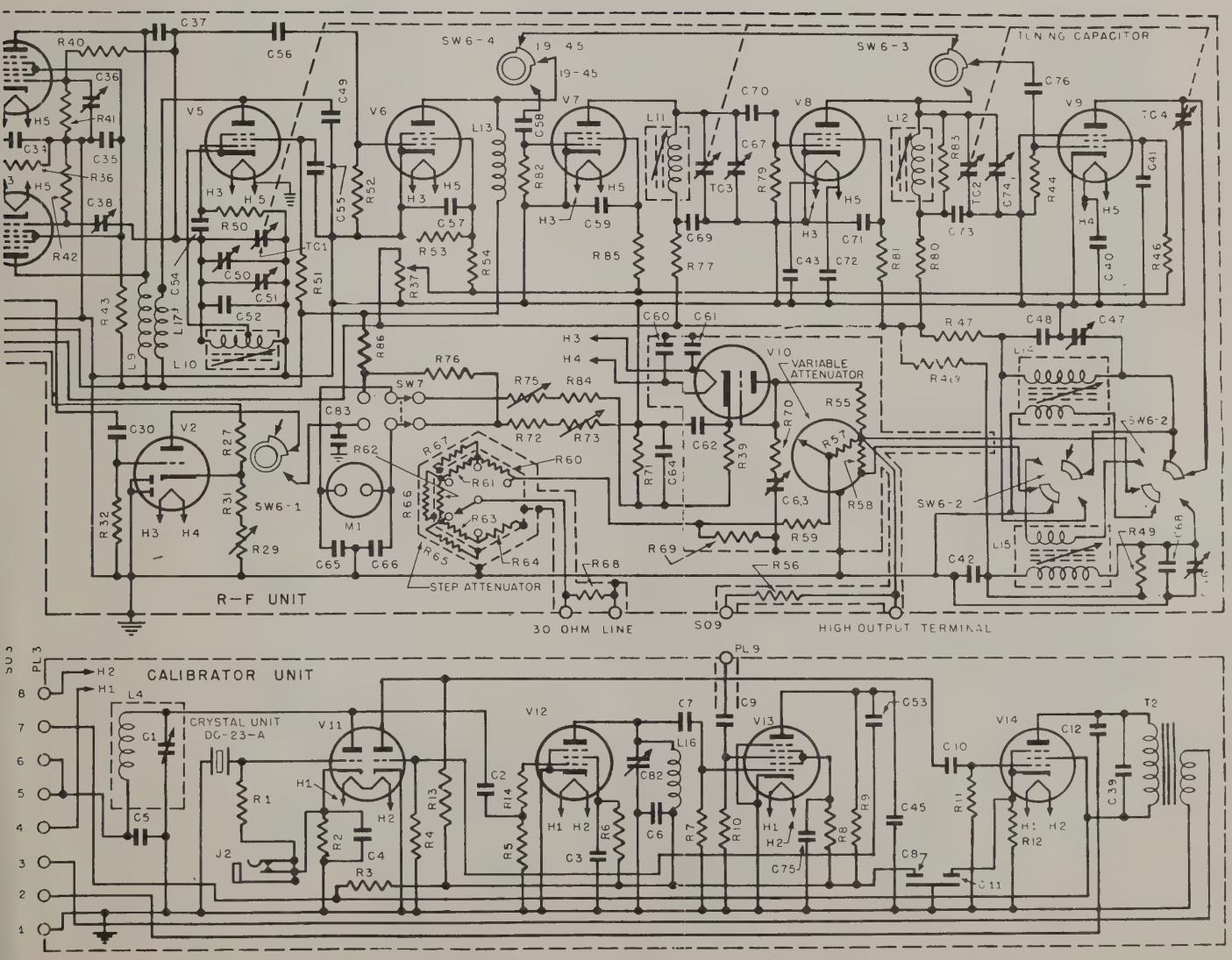
The signal generator I-208 covers the frequencies of 1.90 to 4.5 mc and 19 mc to 45 mc. It is used to align FM equipment such as the BC-603 and BC-683.

The frequency deviation can be adjusted from 0 to 5 kc on each side of the center frequency of the 1.9 to 4.5 mc band, and from 0 to 50 kc either side of the 19 to 45 mc. Five modulation frequencies are provided: 150, 400, 1000, 2500



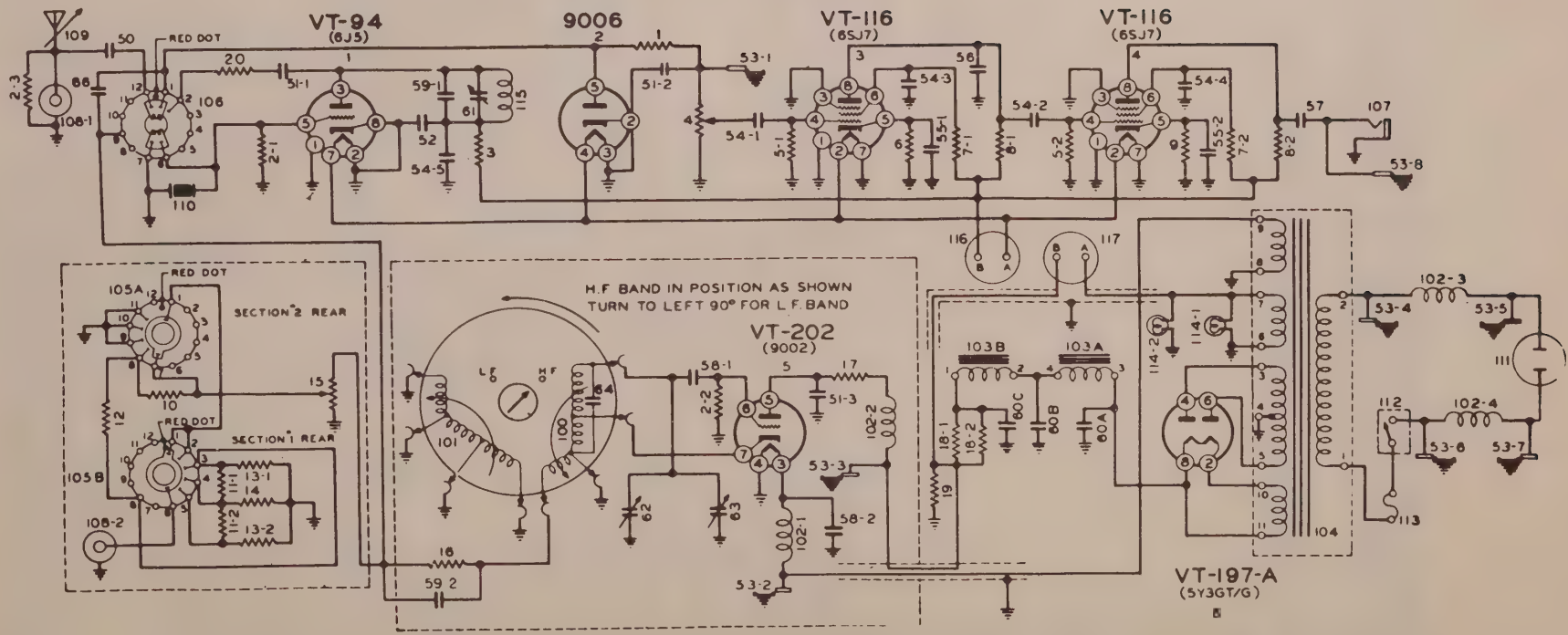
and 5000 cps. External modulation is possible. Up to 0.1 volt is developed at the end of the cable (30 ohm transmission line). Up to 0.84 volt is available from the high output line. An attenuator is used to set the output as needed.

Power is either 12 volts dc or 115V 60 cps.



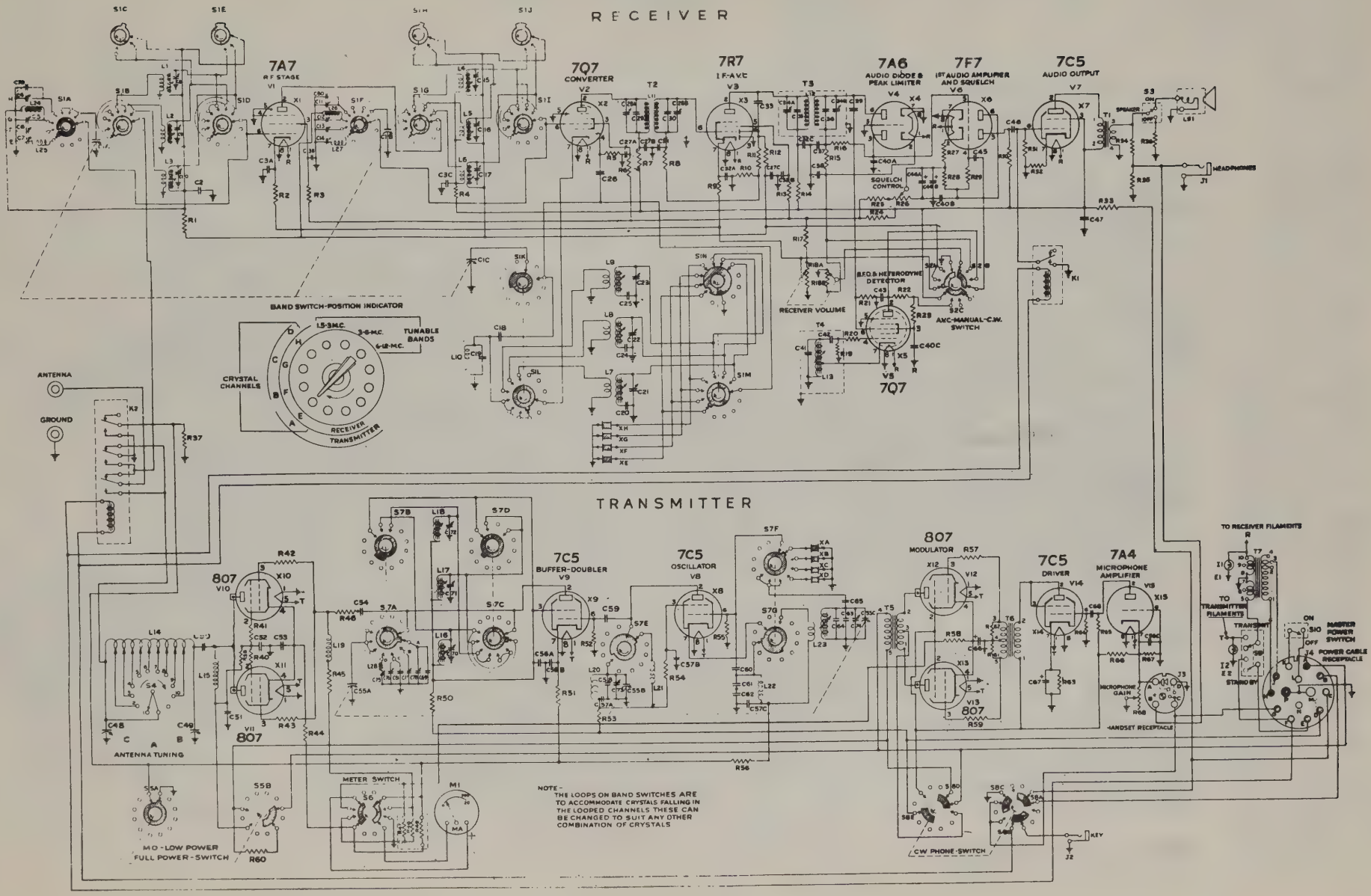
I-122

This equipment provides RF signals for the alignments and operation of the RC-182 and RC-282, and similar equipments. It provides signals for both IF and RF alignments in two bands, 8 to 15 mc and 135 to 230 mc (on third harmonic of 45 to 76 mc). A 5 mc crystal calibrator built in, allows the use of the I-222-A as a heterodyne frequency meter.

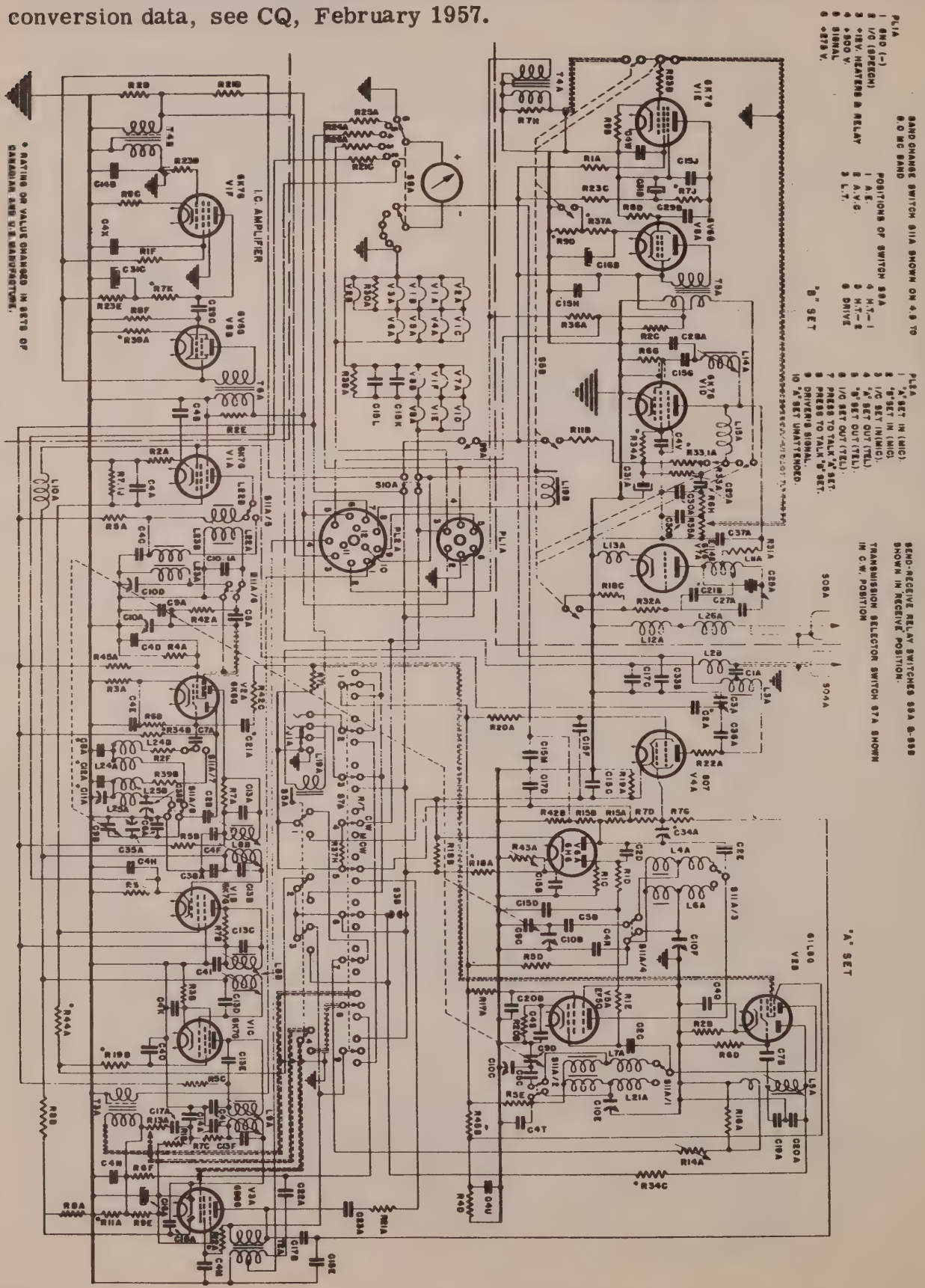


JT-350A

The Jefferson-Travis 350A transmitter-receiver covers 1.5-12 mc in three bands. IF 455 kc. 75 Watt CW or AM VFO or XTAL. Power: 12, 24, 32, 115 vdc, 115 vac. This is a nice rig.

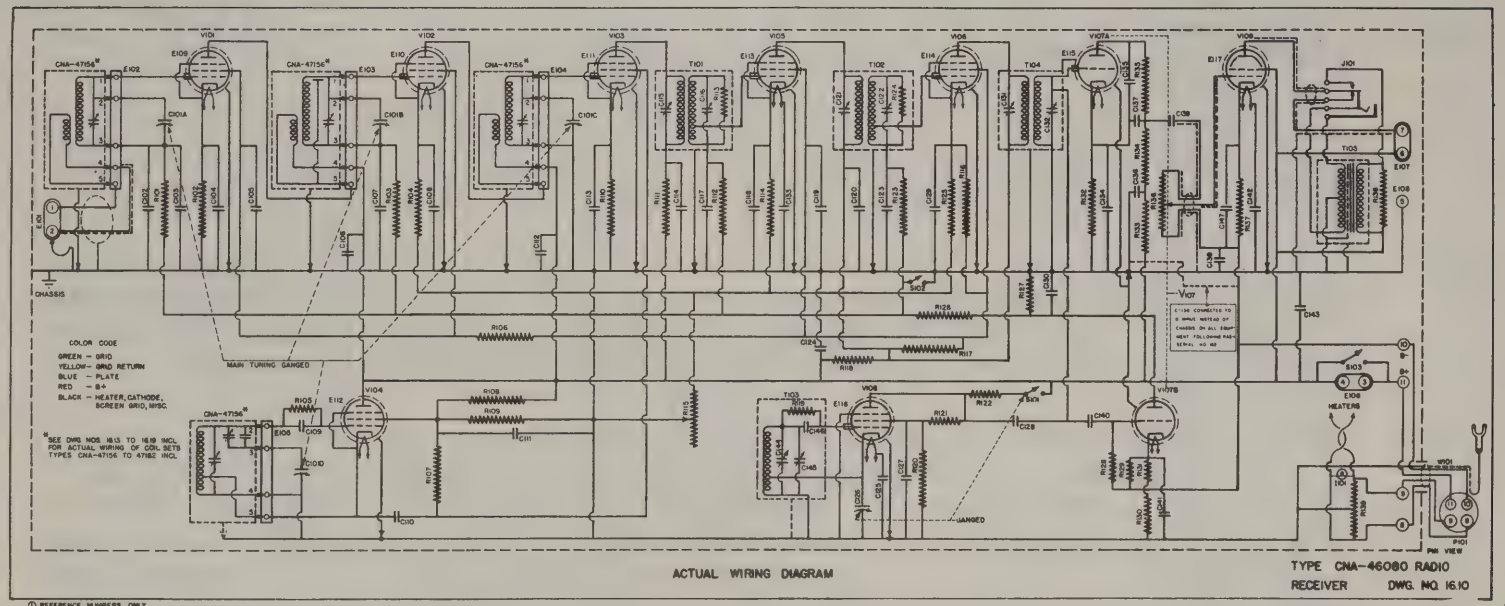


The Mark II was originally designed for export to Russia for use in tanks. If you have a tank, this may be a good unit for you. While it is true that many of these units have been converted for use in the amateur bands, the effort involved to achieve a reasonable result is almost superhuman. For practical conversion data, see CQ, February 1957.


I.C. AMPLIFIER
'A' SET
'B' SET
* RATING OR VALUE CHANGED IN SETS OF CANADIAN AND U.S. MANUFACTURE.
BAND CHANGE SWITCH S11A SHOWN ON 4.0 TO 8.0 MC BAND
POSITIONS OF SWITCH S9A
1 A.E.
2 A.V.C.
3 L.T.
4 H.T.-I
5 H.T.-II
6 DRIVE
PL1A
1 GND (-)
2 I/C (SPEECH)
3 +18V. HEATERS & RELAY
4 +300 V.
5 SIGNAL
6 +275 V.
PL2A
1 'A' SET IN (MIC)
2 'B' SET IN (MIC)
3 I/C SET IN (MIC)
4 'A' SET OUT (TEL)
5 'B' SET OUT (TEL)
6 I/C SET OUT (TEL)
7 PRESS TO TALK 'A' SET
8 PRESS TO TALK 'B' SET
9 DRIVING SIGNAL
10 'A' SET UNATTENDED
SEND-RECEIVE RELAY SWITCHES S9A & S9B SHOWN IN 'RECEIVE' POSITION.
TRANSMISSION SELECTOR SWITCH S7A SHOWN IN C.W. POSITION

RAS

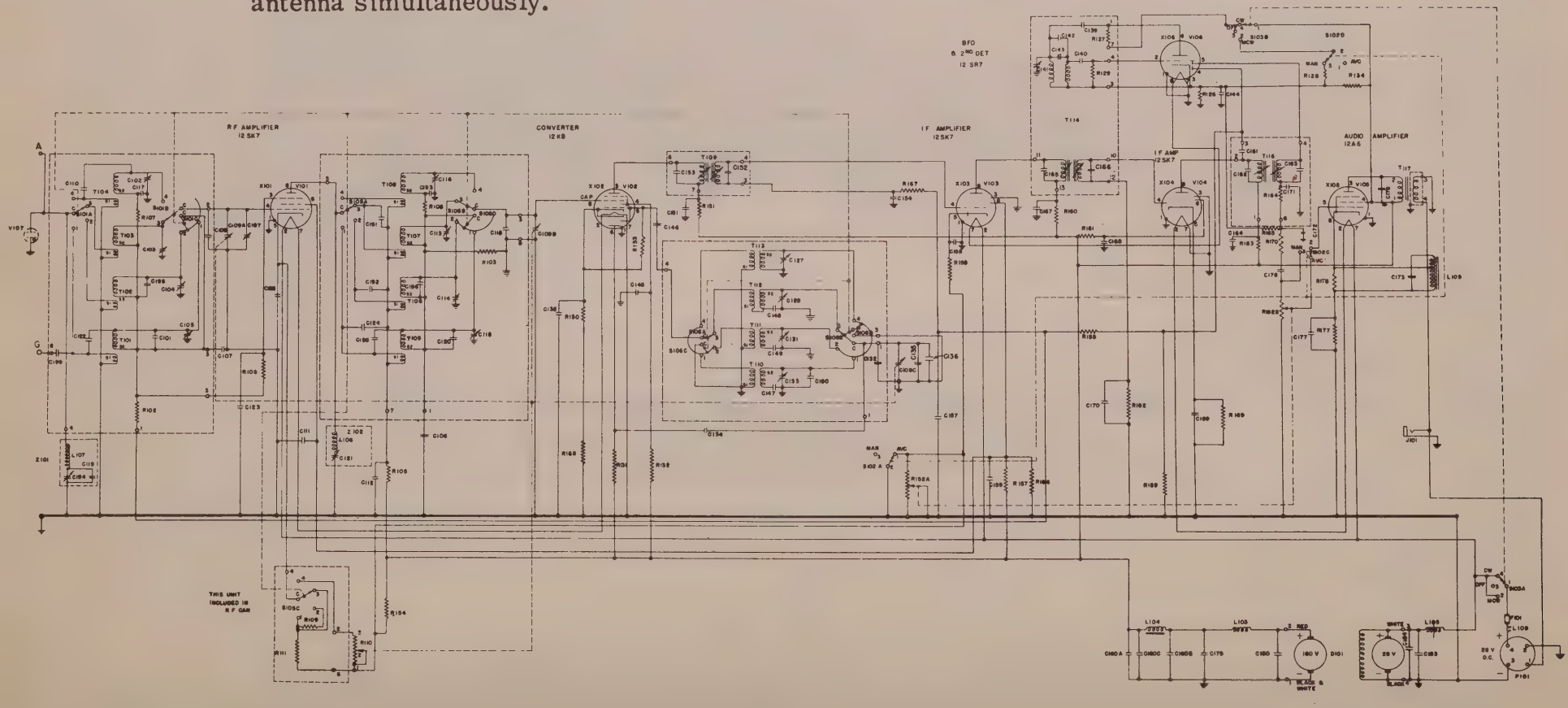
The RAS is the famous National HRO receiver with a thin Navy disguise. It covers from 190 kc to 30 mc with seven plug in coil drawers. A separate AC power supply was used. IF frequency is 175 kc.



RAX

The RAX aircraft radio equipment is a receiver system designed for the U. S. Naval Air Force and covers a range of 200 kc to 27 mc, in three individual receivers. Unit 1, Navy model CG-46115 covers the range of 200 kc to 1500 kc in four bands. Unit 2 Navy model CG-46116 covers the frequency range of 1500 to 9000 kc in four bands, and Unit 3, Navy model CG-46117 covers the frequency range of 7000 to 27000 kc in five bands. Each receiver has a power supply consisting of a dynamotor, the output power of which is 166 volts at 90 ma, operating from an input of 28 volts.

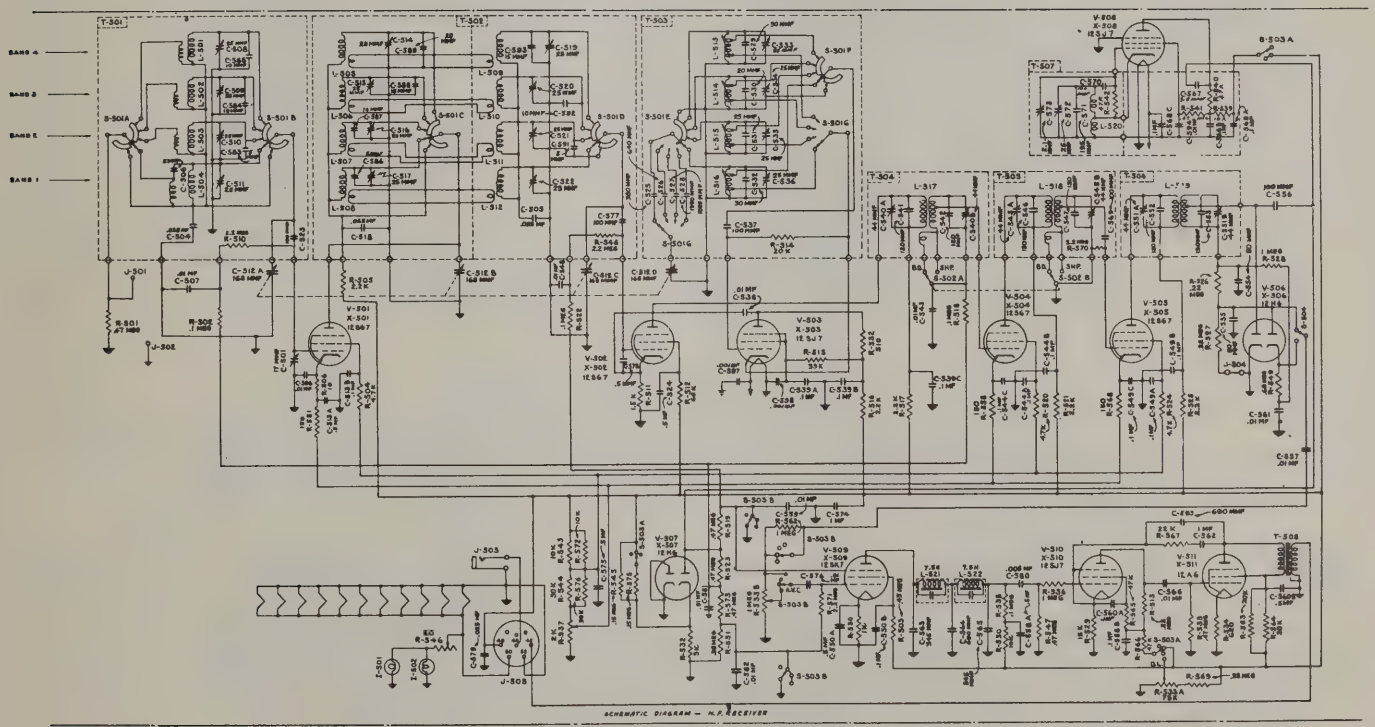
Each receiver is a superheterodyne with unit 1 having an IF of 160 kc, unit 2 having an IF of 915 kc and unit 3 having an IF of 2275 kc. Each unit is capable of receiving CW as well as voice and MCW, and are designed to operate from a common antenna simultaneously.



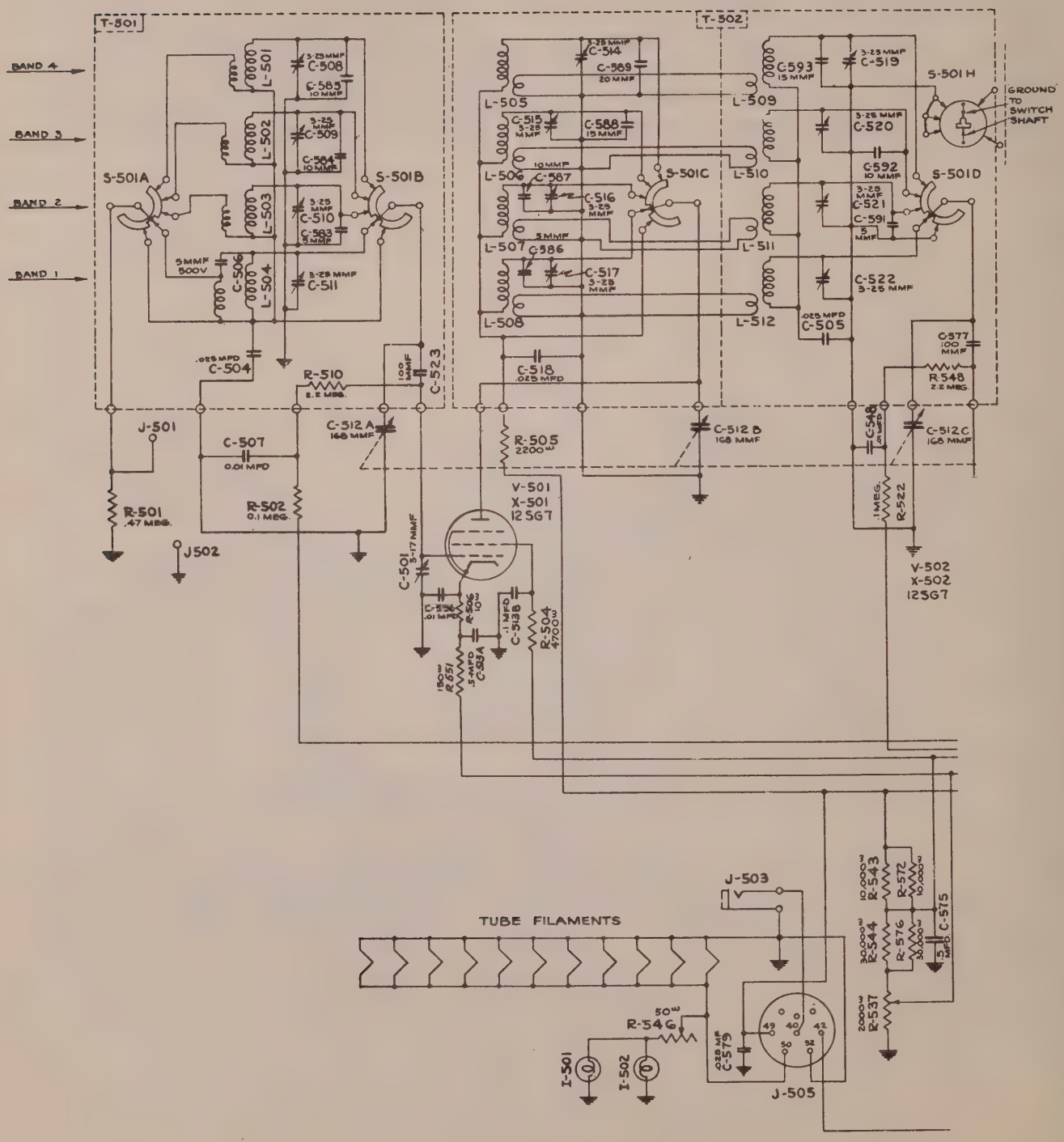
RBM

The RBM is a nomenclature covering two separate receivers, and their associated equipments. Essentially it is a high frequency (2-20 mc)receiver and a medium frequency receiver (200 to 2000 kc.). Both receivers are highly selective using 140 kc in the IF of the MF receiver and 1255 as the IF frequency in the HF unit.

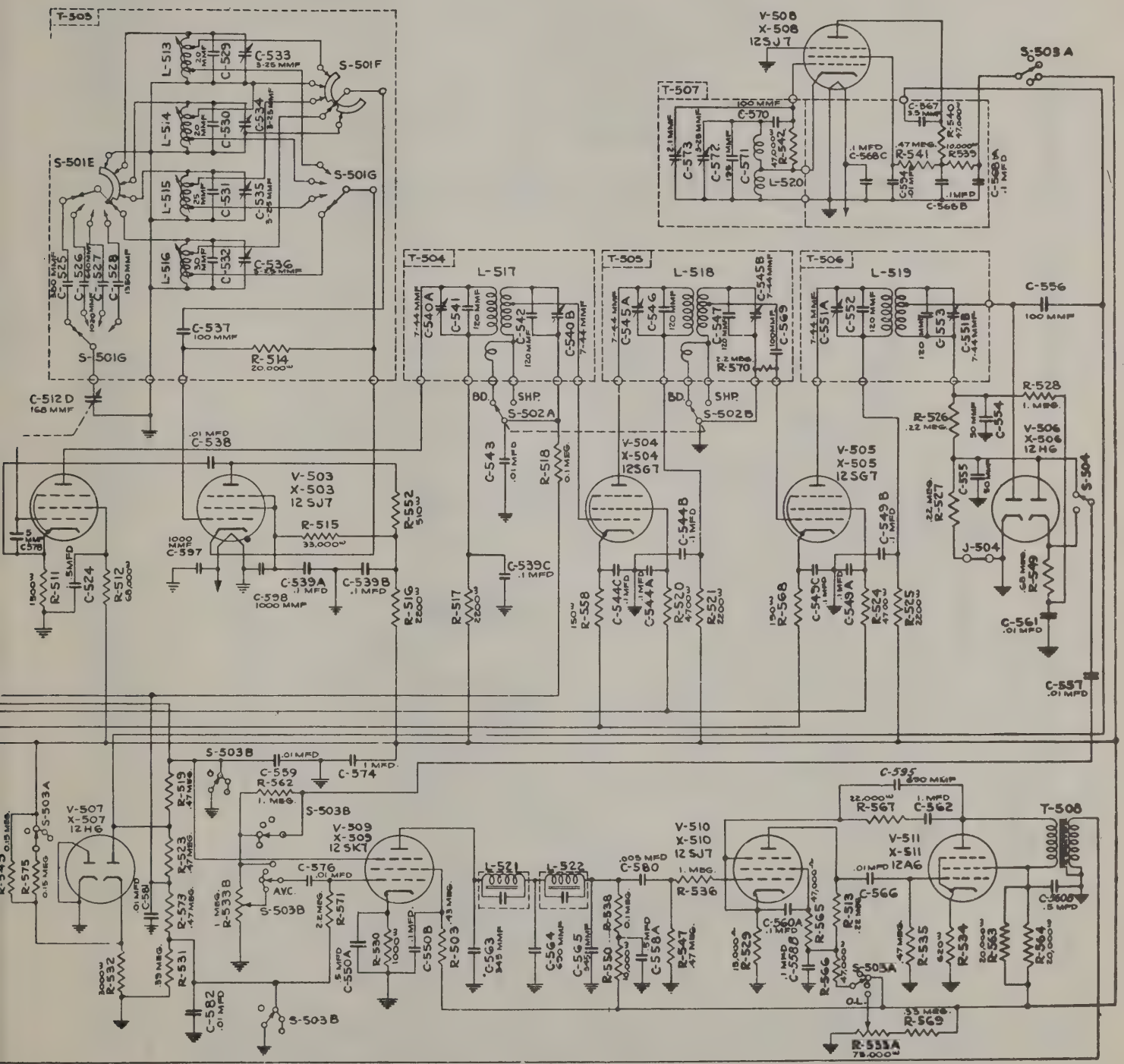
Each receiver incorporates AVC, BFO, noise limiter, antenna trimmer and headset output. No provision is made for loudspeaker operation. Both units are normally housed within a water-tight cannister which becomes an operating table. Normally the equipment is associated with the TBW transmitter. Power is provided either by means of a dynamotor and storage batteries or an AC supply. Power requirements are 190 to 225 volts at 75 ma. and 12.6 volts at 3 amperes.



The RBS receiver is a shipboard receiver covering the frequency band of 2.0 to 20.0 mc in four bands. It is capable of receiving both CW and voice AM and operates directly from 110v AC, from a separate power supply. The RBS employs both noise

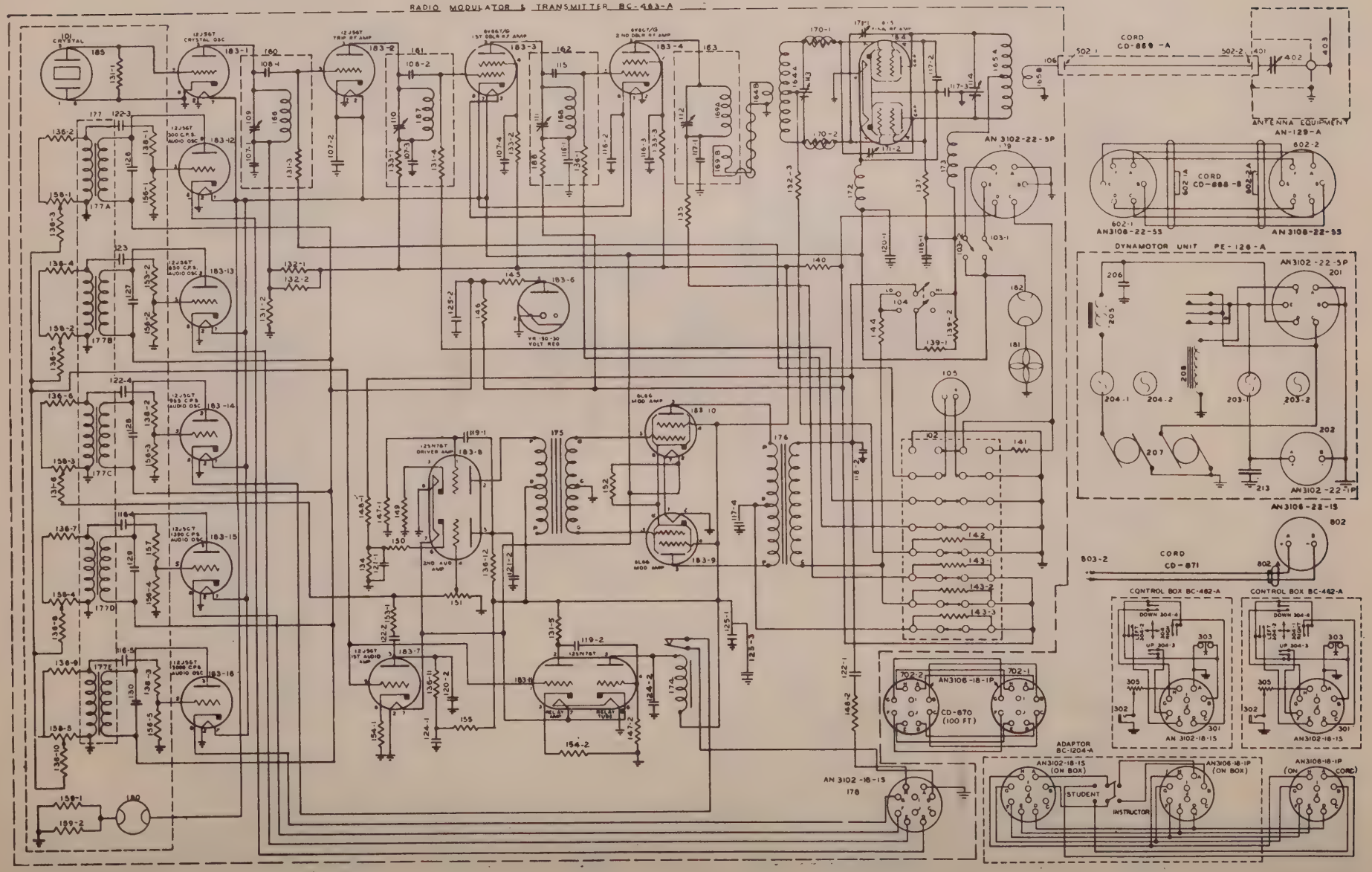


limiter and AVC, and features two positions of selectivity, broad and sharp. The intermediate frequency is 455 kc. A tuned filter is used in the audio stages to provide for additional selectivity.



RC-56

This is a 20 watt, 67-74 mc transmitter used for controlling pilotless aircraft.

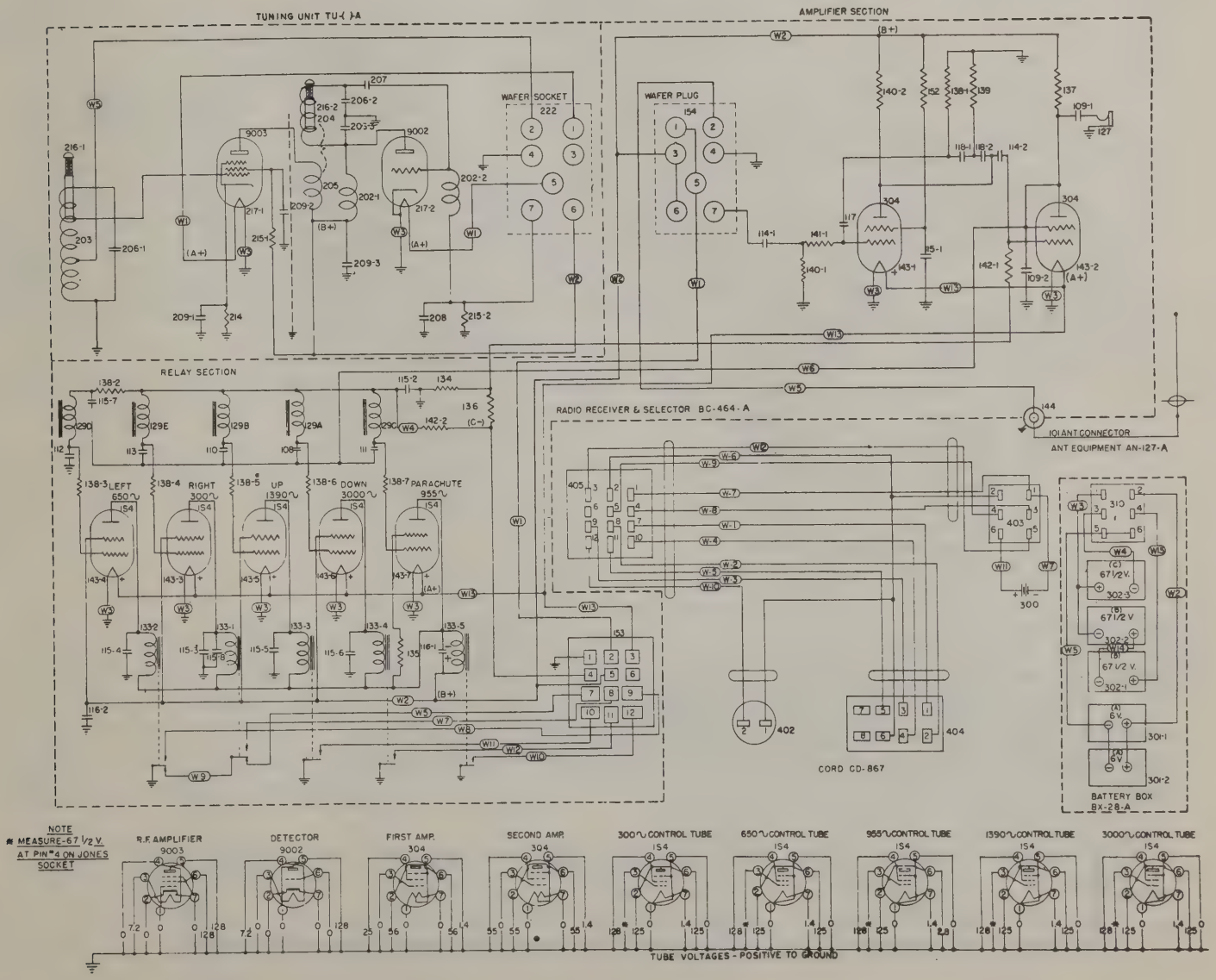


RC-57

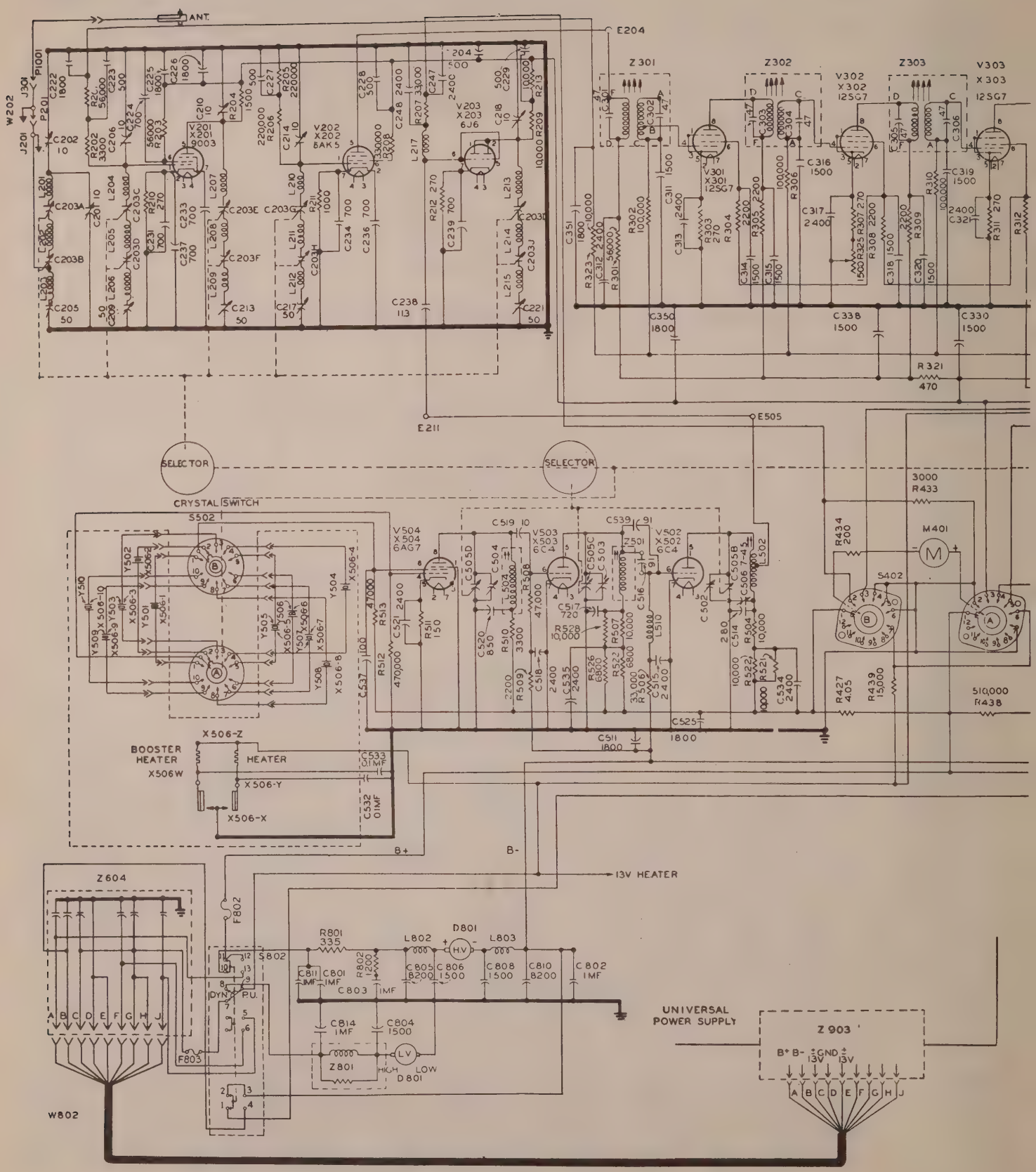
The RC-57 equipment is used to control the drone type pilotless aircraft when used for target purposes. It is a receiver, battery operated, with four audio tone channels, each supplying control signals for use within the aircraft control system. The equipment operates within the range of 68 to 73 mc and is preset to frequency prior to take-off. Operation from the dry battery supply is approximately 3 hours. Five tuning units are available,

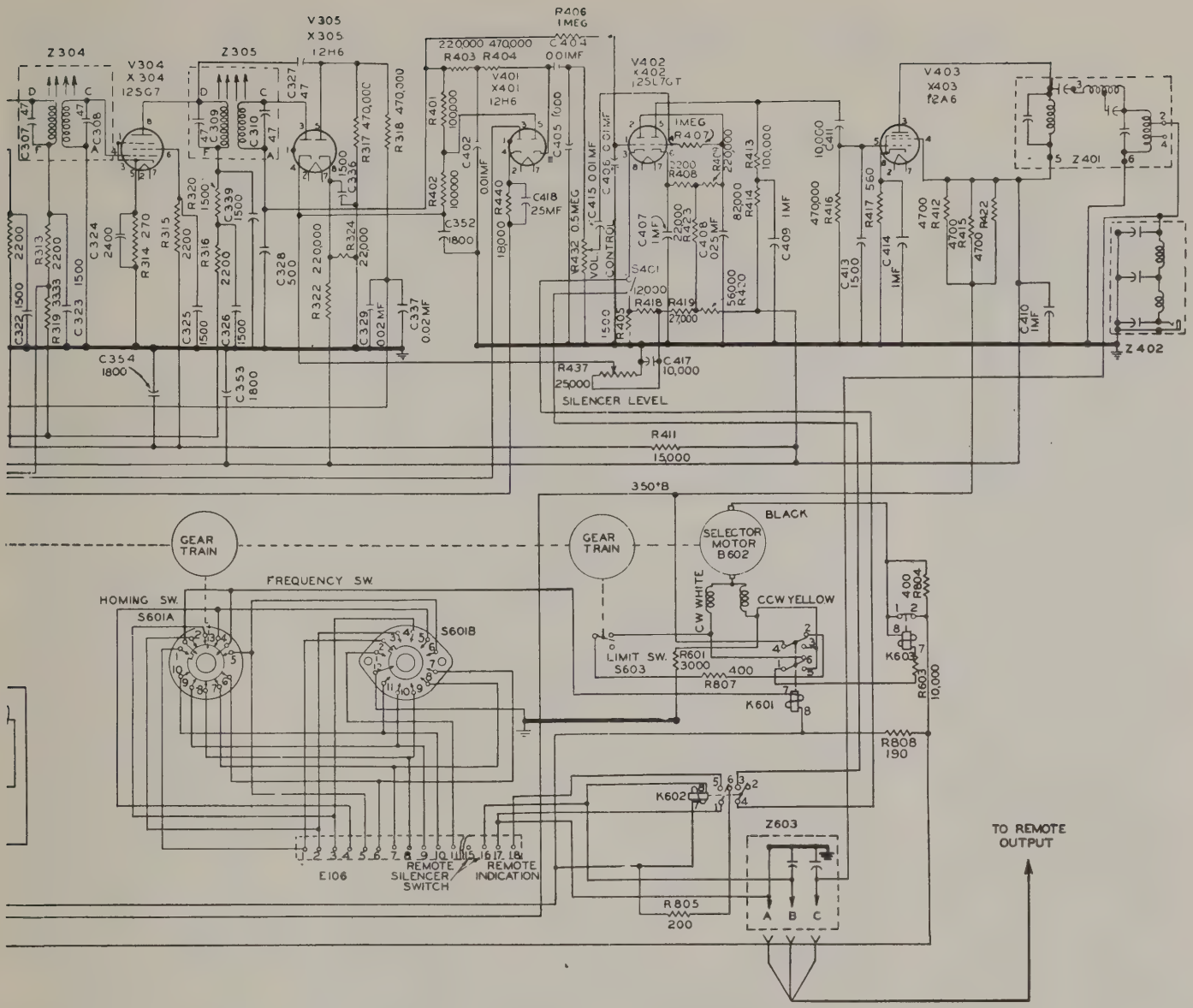
TU-41	73 mc
TU-43	71.3 mc
TU-44	69.6 mc
TU-45	68.0 mc
TU-55	68-73 mc

Power supplied to the receiver is obtained from dry cells



RC-57-A, Schematic Diagram Target Control Receiving Equipment


ANT.
E204
Z 301
Z302
Z303
V303
X303
12SG7
V302
X302
12SG7
V301
X301
12SG7
V202
X202
6AK5
V203
X203
6J6
E211
E505
SELECTOR
SELECTOR
CRYSTAL SWITCH
S502
V504
X504
6AG7
V503
X503
6C4
V502
X502
6C4
M401
3000
R433
R434
200
S402
510,000
R438
R427
405
R439
15,000
BOOSTER
HEATER
X506W
HEATER
X506-Z
X506-Y
X506-X
B+
B-
13V HEATER
Z604
F802
S802
R801
335
L802
L803
D801
HV
LV
Z801
HIGH
LOW
D 801
DYN. P.U.
F803
W802
UNIVERSAL
POWER SUPPLY
Z 903
B+ B- GND 13V 13V
A B C D E F G H J

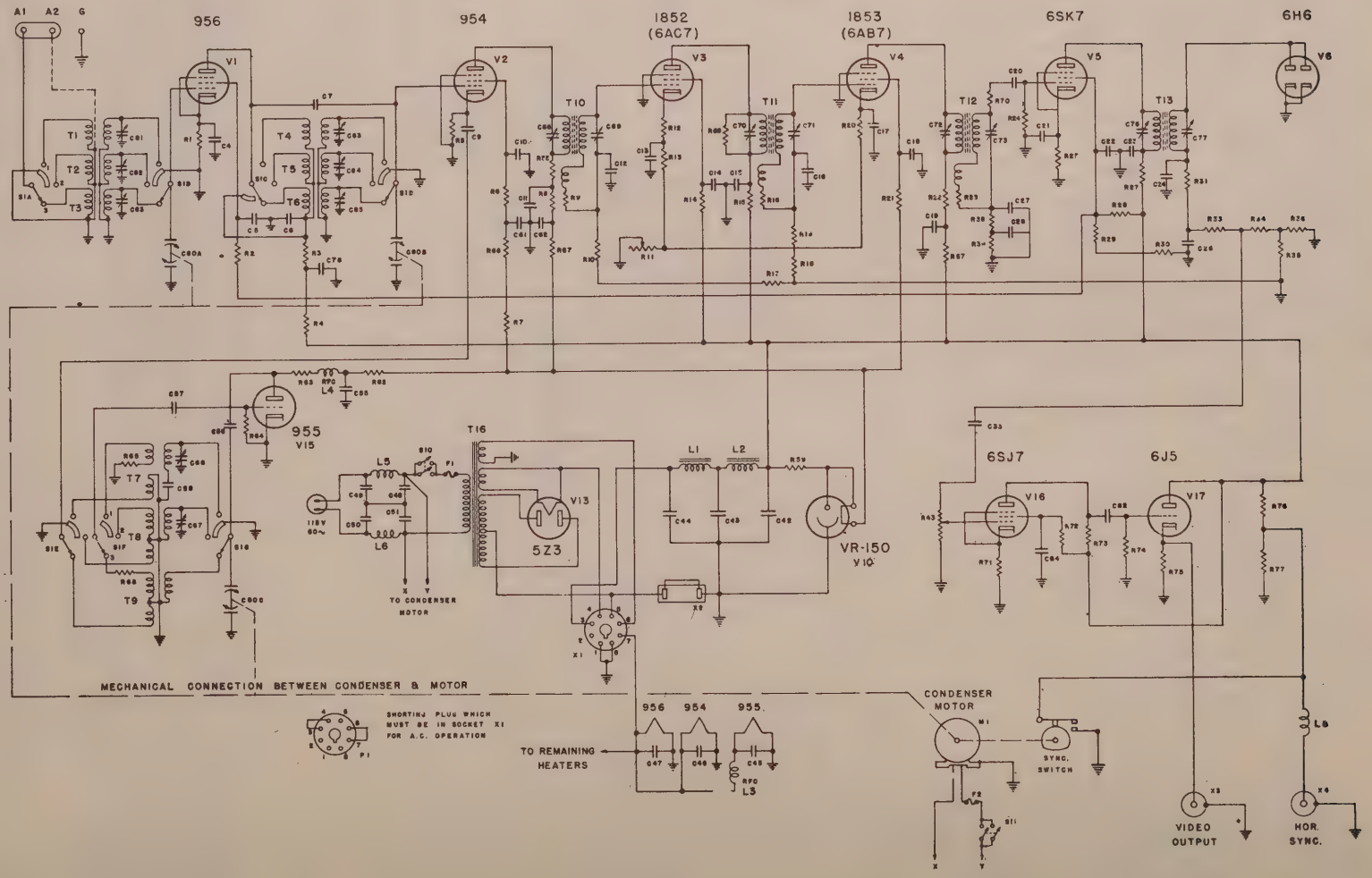


The Navy RDR is a VHF-UHF receiver covering the frequency range 225-390 mc. Originally part of the MAR equipment it may be used by itself as it is fully self contained. The receiver is a ten channel crystal superheterodyne capable of remote channel selection and operation. It includes a dynamotor enabling it to operate from a 13 volt dc supply. Some models were made for 24 volt systems as well. An external power supply may be used when desired.

The intermediate frequency of the receiver is 30.2 mc and the receiver circuits incorporate a noise limiter, AVC, squelch and other features. The crystal oscillator operates in the 4814.815 to 7777.778 kc range. Accessories include remote control devices and a gasoline generator. Many sectional RF stages were released to surplus, at the termination of the contract.

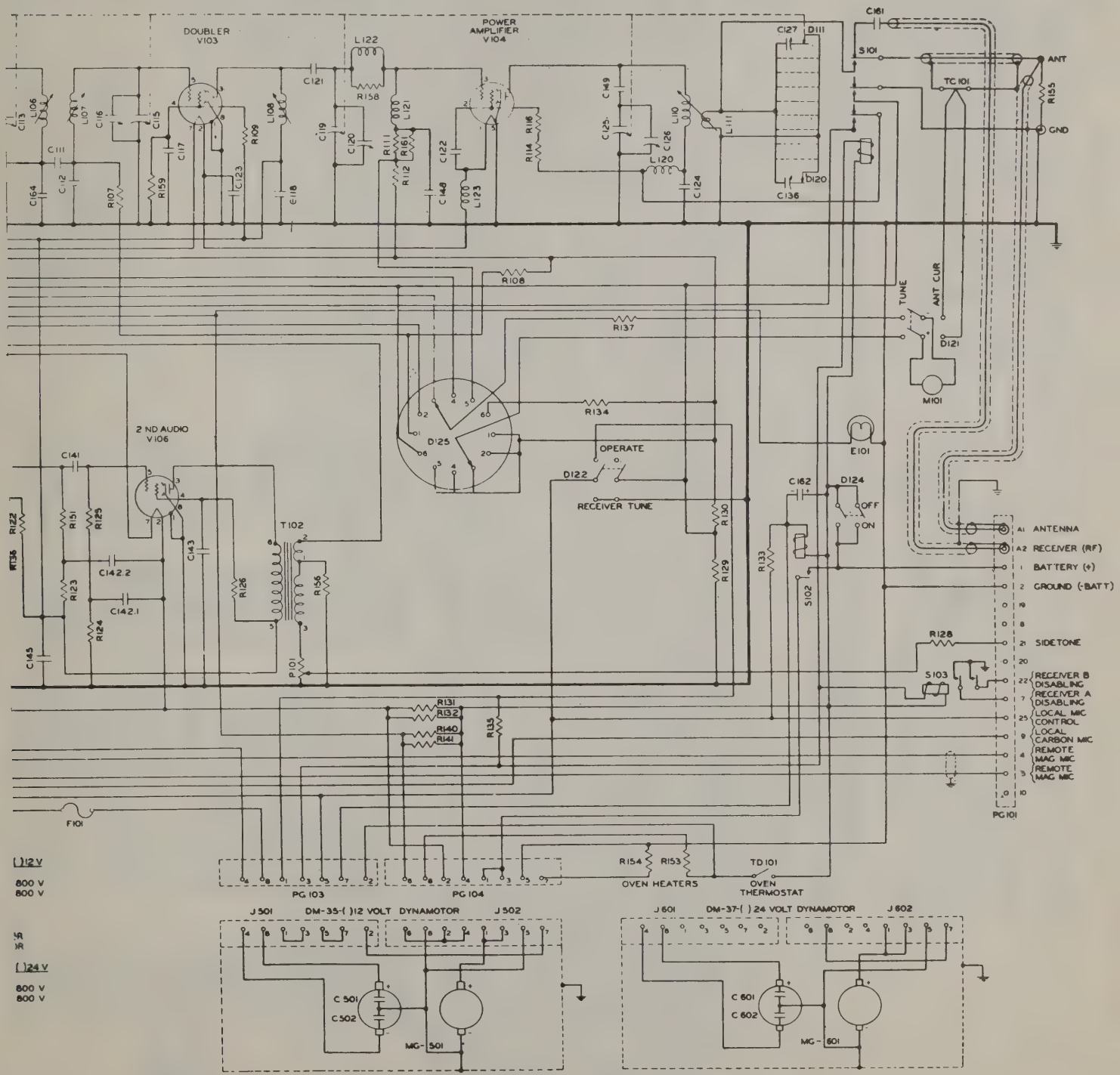
RDC

The RDC (Navy) is a receiver for panoramic reception over the frequency range of 28.5 to 140 mc, in three bands. Presentation is provided to an external oscilloscope. Scanning the frequency range is accomplished by a motor drive rotating the tuning capacitor. The receiver is a superheterodyne with an IF of 5.25 mc. The output is video, after detection, and this is then provided to the oscilloscope for presentation. Synchronization signals are provided for the oscilloscope, but the oscilloscope must provide its own sweep source. The sweep recurrance is 15 cps and this provides 15 complete band inspections every second. Power input is 115 volts 60 cycles



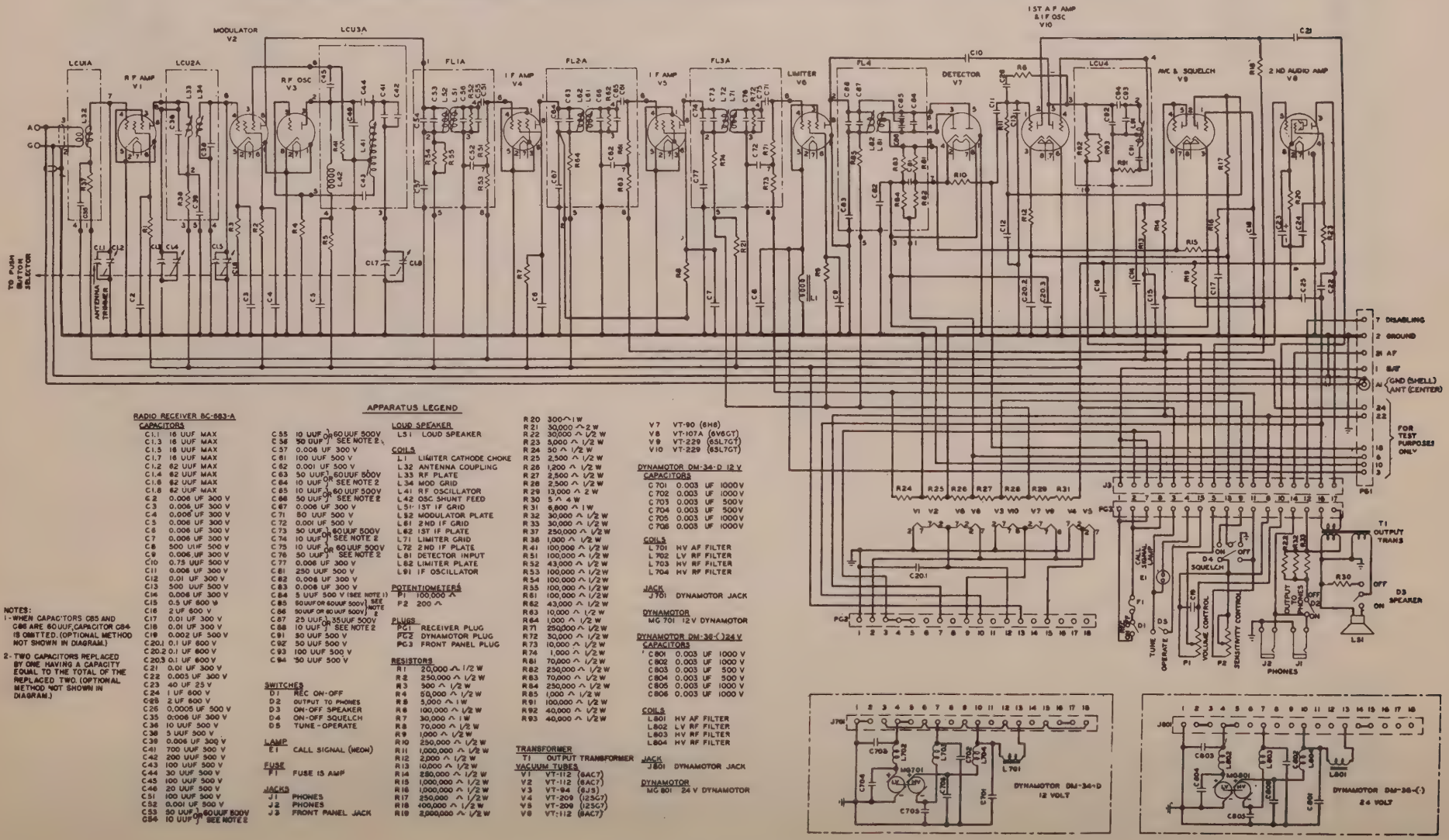
transmitter produces 20 watts output with a frequency deviation of 40 kc. The crystals are in the 375 kc to 540. 277 kc range. On 12 volts the system draws 24 amperes. On 24 volts the system draws 14 amperes.

Frequency changing is accomplished by means of the pre-set push-button. The receiver is known as the BC-683 and the transmitter as the BC-684A.



The SCR-608A and SCR-628A are basically the same equipment. They operate from 27 to 38.9 mc and are calibrated every 100 kc. They operate on FM or CW. The receivers are tunable, but the transmitters are crystal controlled. Ten preset channels are available. The receiver IF is 2.65 mc. They operate on 12 or 24 volts dc and have a loudspeaker built into the receiver. The transmitter produces 20 watts output with a frequency deviation of 40 kc. The crystals are in the 375 kc to 540.277 kc range. On 12 volts the system draws 24 amperes. On 24 volts the system draws 14 amperes.

Frequency changing is accomplished by means of the pre-set push-button. The receiver is known as the BC-683 and the transmitter as the BC-684A.



RADIO RECEIVER BC-683-A

CAPACITORS

C1,1	10 UUF MAX
C1,3	16 UUF MAX
C1,5	18 UUF MAX
C1,7	16 UUF MAX
C1,2	62 UUF MAX
C1,4	62 UUF MAX
C1,6	62 UUF MAX
C1,8	62 UUF MAX
C 2	0.006 UF 300 V
C 3	0.006 UF 300 V
C 4	0.006 UF 300 V
C 5	0.006 UF 300 V
C 6	0.006 UF 300 V
C 7	0.006 UF 300 V
C 8	500 UUF 500 V
C 9	0.006 UF 300 V
C10	0.75 UUF 500 V
C11	0.008 UF 300 V
C12	0.01 UF 300 V
C13	500 UUF 500 V
C14	0.006 UF 300 V
C15	0.5 UF 600 V
C16	2 UF 600 V
C17	0.01 UF 300 V
C18	0.01 UF 300 V
C19	0.002 UF 500 V
C20,1	0.1 UF 600 V
C20,2	0.1 UF 600 V
C20,3	0.1 UF 600 V
C21	0.01 UF 300 V
C22	0.005 UF 300 V
C23	40 UF 25 V
C24	1 UF 600 V
C25	2 UF 600 V
C26	0.0005 UF 500 V
C35	0.006 UF 300 V
C36	10 UUF 500 V
C38	5 UUF 500 V
C39	0.006 UF 300 V
C41	700 UUF 500 V
C42	200 UUF 500 V
C43	100 UUF 500 V
C44	30 UUF 500 V
C45	100 UUF 500 V
C46	20 UUF 500 V
C51	100 UUF 500 V
C52	0.001 UF 500 V
C53	50 UUF OR 60UUF 500V
C54	10 UUF OR SEE NOTE 2
C 55	10 UUF OR 60UUF 500V
C 56	50 UUF OR SEE NOTE 2
C 57	0.006 UF 300 V
C 61	100 UUF 500 V
C 62	0.001 UF 500 V
C 63	50 UUF OR 60UUF 500V
C 64	10 UUF OR SEE NOTE 2
C 65	10 UUF OR 60 UUF 500V
C 66	50 UUF OR SEE NOTE 2
C 67	0.006 UF 300 V
C 71	80 UUF 500 V
C 72	0.001 UF 500 V
C 73	50 UUF OR 60UUF 500V
C 74	10 UUF OR SEE NOTE 2
C 75	10 UUF OR 60 UUF 500V
C 76	50 UUF OR SEE NOTE 2
C 77	0.006 UF 300 V
C 81	250 UUF 500 V
C 82	0.006 UF 300 V
C 83	0.006 UF 300 V
C 84	5 UUF 500 V (SEE NOTE 1)
C 85	50UUF OR 60UUF 500V OR SEE NOTE 2
C 86	50UUF OR 60 UUF 500V OR SEE NOTE 2
C 87	25 UUF OR 35UUF 500V
C 88	10 UUF OR SEE NOTE 2
C 91	50 UUF 500 V
C 92	50 UUF 500 V
C 93	100 UUF 500 V
C 94	50 UUF 500 V
C84	10 UUF OR SEE NOTE 2

SWITCHES

D1	REC ON-OFF
D2	OUTPUT TO PHONES
D3	ON-OFF SPEAKER
D4	ON-OFF SQUELCH
D5	TUNE - OPERATE

LAMP

E1	CALL SIGNAL (NEON)

FUSE

F1	FUSE 15 AMP

JACKS

J1	PHONES
J2	PHONES
J3	FRONT PANEL JACK

APPARATUS LEGEND

LOUD SPEAKER

LS1	LOUD SPEAKER

COILS

L1	LIMITER CATHODE CHOKE
L32	ANTENNA COUPLING
L33	RF PLATE
L34	MOD GRID
L41	RF OSCILLATOR
L42	OSC SHUNT FEED
L51	1ST I F GRID
L52	MODULATOR PLATE
L61	2ND I F GRID
L62	1ST I F PLATE
L71	LIMITER GRID
L72	2ND I F PLATE
L81	DETECTOR INPUT
L82	LIMITER PLATE
L91	I F OSCILLATOR

POTENTIOMETERS

P1	100,000 Ω
P2	200 Ω

PLUGS

PG1	RECEIVER PLUG
PG2	DYNAMOTOR PLUG
PG3	FRONT PANEL PLUG

RESISTORS

R1	20,000 Ω 1/2 W
R2	250,000 Ω 1/2 W
R3	300 Ω 1/2 W
R4	50,000 Ω 1/2 W
R5	5,000 Ω 1W
R6	100,000 Ω 1/2 W
R7	30,000 Ω 1W
R8	70,000 Ω 1/2 W
R9	1,000 Ω 1/2 W
R10	250,000 Ω 1/2 W
R11	1,000,000 Ω 1/2 W
R12	2,000 Ω 1/2 W
R13	10,000 Ω 1/2 W
R14	250,000 Ω 1/2 W
R15	1,000,000 Ω 1/2 W
R16	1,000,000 Ω 1/2 W
R17	250,000 Ω 1/2 W
R18	400,000 Ω 1/2 W
R19	2,500,000 Ω 1/2 W
R20	300 Ω 1W
R21	30,000 Ω 2 W
R22	30,000 Ω 1/2 W
R23	5,000 Ω 1/2 W
R24	50 Ω 1/2 W
R25	2,500 Ω 1/2 W
R26	1,200 Ω 1/2 W
R27	2,500 Ω 1/2 W
R28	2,500 Ω 1/2 W
R29	13,000 Ω 2 W
R30	5 Ω 4 W
R31	6,800 Ω 1W
R32	30,000 Ω 1/2 W
R33	30,000 Ω 1/2 W
R37	250,000 Ω 1/2 W
R38	1,000 Ω 1/2 W
R41	100,000 Ω 1/2 W
R51	100,000 Ω 1/2 W
R52	43,000 Ω 1/2 W
R53	100,000 Ω 1/2 W
R54	100,000 Ω 1/2 W
R55	100,000 Ω 1/2 W
R61	100,000 Ω 1/2 W
R62	43,000 Ω 1/2 W
R63	10,000 Ω 1/2 W
R64	1,000 Ω 1/2 W
R71	250,000 Ω 1/2 W
R72	30,000 Ω 1/2 W
R73	10,000 Ω 1/2 W
R74	1,000 Ω 1/2 W
R81	70,000 Ω 1/2 W
R82	250,000 Ω 1/2 W
R83	70,000 Ω 1/2 W
R84	250,000 Ω 1/2 W
R85	1,000 Ω 1/2 W
R91	100,000 Ω 1/2 W
R92	40,000 Ω 1/2 W
R93	40,000 Ω 1/2 W

TRANSFORMER

T1	OUTPUT TRANSFORMER

VACUUM TUBES

V1	VT-112 (6AC7)
V2	VT-112 (6AC7)
V3	VT-94 (6J5)
V4	VT-209 (12SG7)
V5	VT-209 (12SG7)
V6	VT-112 (6AC7)
V7	VT-90 (6H6)
V8	VT-107A (6V6GT)
V9	VT-229 (6SL7GT)
V10	VT-229 (6SL7GT)

DYNAMOTOR DM-34-D 12 V CAPACITORS

C 701	0.003 UF 1000 V
C 702	0.003 UF 1000 V
C 703	0.003 UF 500 V
C 704	0.003 UF 500 V
C 705	0.003 UF 1000 V
C 706	0.003 UF 1000 V

COILS

L 701	HV AF FILTER
L 702	LV RF FILTER
L 703	HV RF FILTER
L 704	HV RF FILTER

JACK

J701	DYNAMOTOR JACK

DYNAMOTOR

MG 701	12V DYNAMOTOR

DYNAMOTOR DM-36-( )24 V CAPACITORS

C 801	0.003 UF 1000 V
C 802	0.003 UF 1000 V
C 803	0.003 UF 500 V
C 804	0.003 UF 500 V
C 805	0.003 UF 1000 V
C 806	0.003 UF 1000 V

COILS

L 801	HV AF FILTER
L 802	LV RF FILTER
L 803	HV RF FILTER
L 804	HV RF FILTER

JACK

J801	DYNAMOTOR JACK

DYNAMOTOR

MG 801	24 V DYNAMOTOR

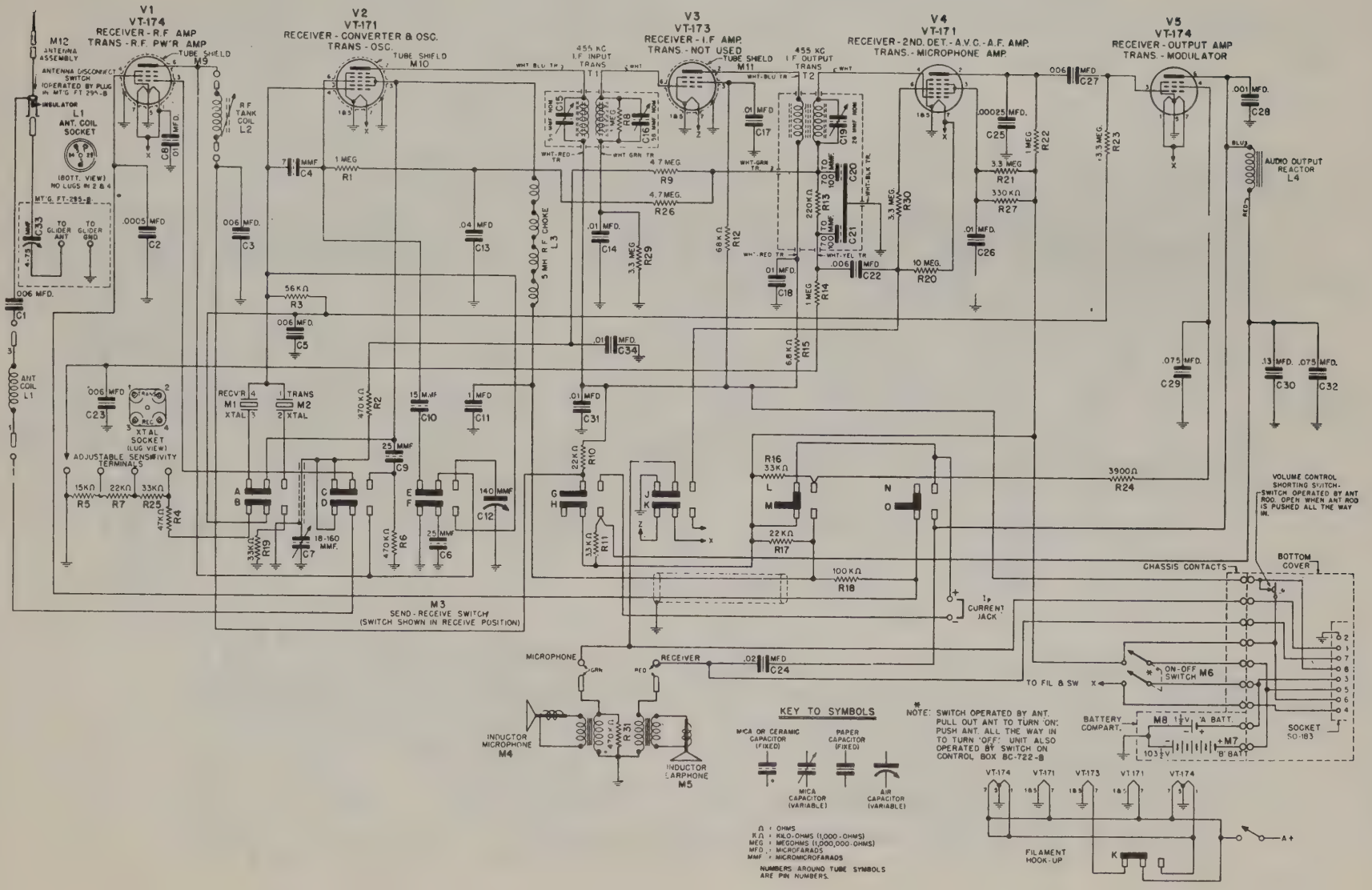
NOTES:
1 - WHEN CAPACITORS C85 AND C86 ARE 60 UUF, CAPACITOR C84 IS OMITTED. (OPTIONAL METHOD NOT SHOWN IN DIAGRAM.)

2 - TWO CAPACITORS REPLACED BY ONE HAVING A CAPACITY EQUAL TO THE TOTAL OF THE REPLACED TWO. (OPTIONAL METHOD NOT SHOWN IN DIAGRAM.)

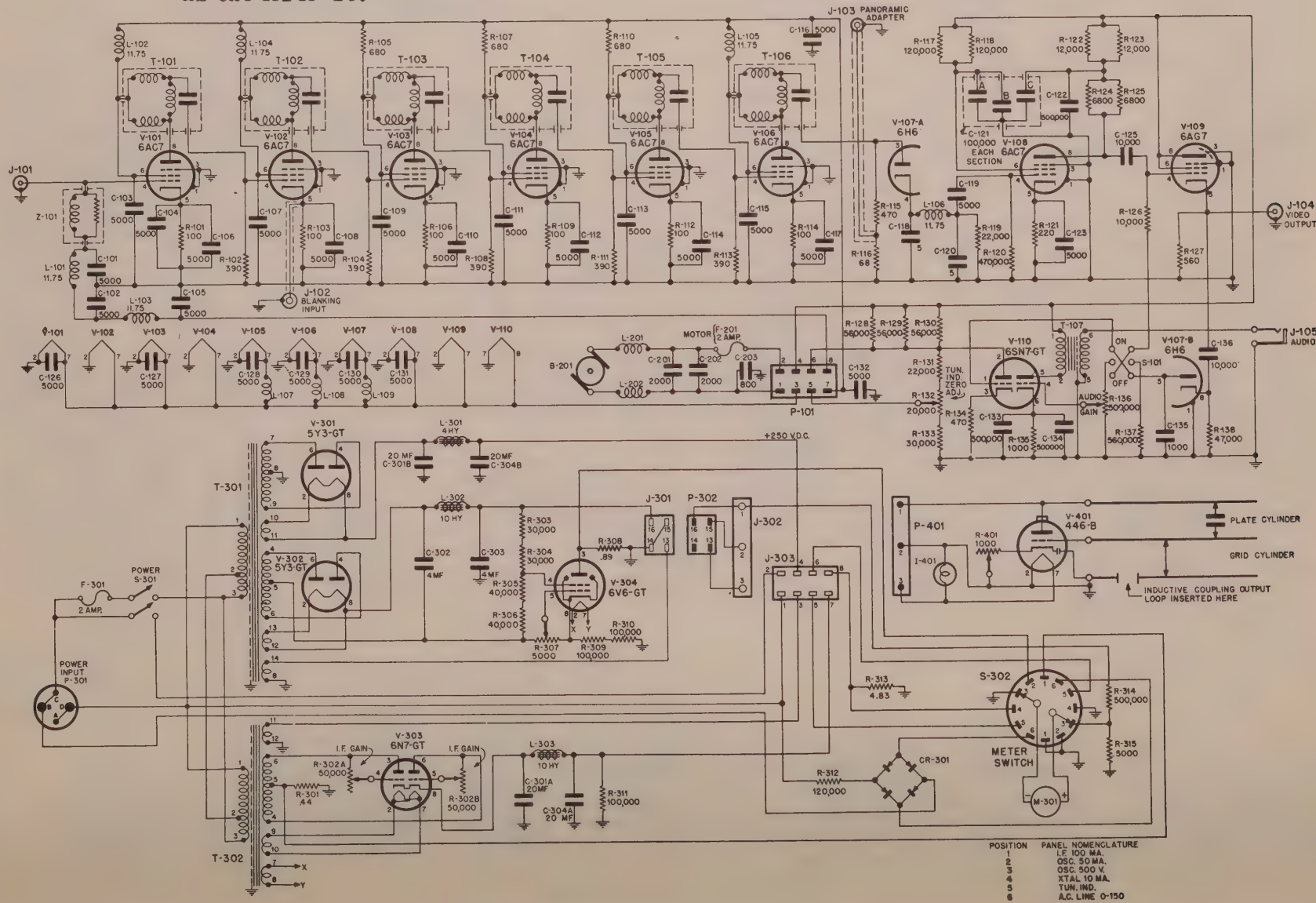
Radio Receiver BC-683-A: Schematic Diagram

SCR-610 (SCR-585, BC-611, BC-721)

3500-6000 kc battery operated handy-talky. 455 kc IF. Crystal controlled. Pulling the antenna operates the unit. Power: 1.5V/.35a and 103.5v/.016a for receive and .035 amps for transmit.


V1 VT-174 RECEIVER-R.F. AMP TRANS-R.F. PW'R AMP
V2 VT-171 RECEIVER-CONVERTER & OSC. TRANS-OSC.
V3 VT-173 RECEIVER-I.F. AMP TRANS.-NOT USED
V4 VT-171 RECEIVER-2ND. DET.-A.V.C.-A.F. AMP. TRANS.-MICROPHONE AMP.
V5 VT-174 RECEIVER-OUTPUT AMP TRANS.-MODULATOR
M12 ANTENNA ASSEMBLY
L1 ANT. COIL SOCKET
L2 R.F. TANK COIL
L3 5 MH R.F. CHOKE
L4 AUDIO OUTPUT REACTOR
T1 455 KC I.F. INPUT TRANS
T2 455 KC I.F. OUTPUT TRANS
M1 RECVR XTAL
M2 TRANS XTAL
M3 SEND-RECEIVE SWITCH (SWITCH SHOWN IN RECEIVE POSITION)
M4 INDUCTOR MICROPHONE
M5 INDUCTOR EARPHONE
M6 ON-OFF SWITCH
M7 'B' BATT.
M8 1½V 'A' BATT.
M9 TUBE SHIELD
M10 TUBE SHIELD
M11 TUBE SHIELD
ANTENNA DISCONNECT SWITCH (OPERATED BY PLUG IN MTG FT 294-B
INSULATOR
(BOTT. VIEW) NO LUGS IN 2 & 4
MTG. FT-295-B
TO GLIDER ANT
TO GLIDER GND
ANT COIL L1
XTAL SOCKET (LUG VIEW)
ADJUSTABLE SENSITIVITY TERMINALS
15KΩ R5
22KΩ R7
33KΩ R25
47KΩ R4
18-160 MMF. C7
MICROPHONE
RECEIVER
CURRENT JACK
TO FIL & SW
CHASSIS CONTACTS
BOTTOM COVER
SOCKET 50-183
BATTERY COMPART.
VOLUME CONTROL SHORTING SWITCH-SWITCH OPERATED BY ANT ROD. OPEN WHEN ANT ROD IS PUSHED ALL THE WAY IN.
FILAMENT HOOK-UP
KEY TO SYMBOLS
MICA OR CERAMIC CAPACITOR (FIXED)
PAPER CAPACITOR (FIXED)
MICA CAPACITOR (VARIABLE)
AIR CAPACITOR (VARIABLE)
Ω : OHMS
KΩ : KILO-OHMS (1,000-OHMS)
MEG : MEGOHMS (1,000,000-OHMS)
MFD : MICROFARADS
MMF : MICROMICROFARADS
NUMBERS AROUND TUBE SYMBOLS ARE PIN NUMBERS.
NOTE: SWITCH OPERATED BY ANT. PULL OUT ANT TO TURN 'ON'; PUSH ANT. ALL THE WAY IN TO TURN 'OFF'; UNIT ALSO OPERATED BY SWITCH ON CONTROL BOX BC-722-B

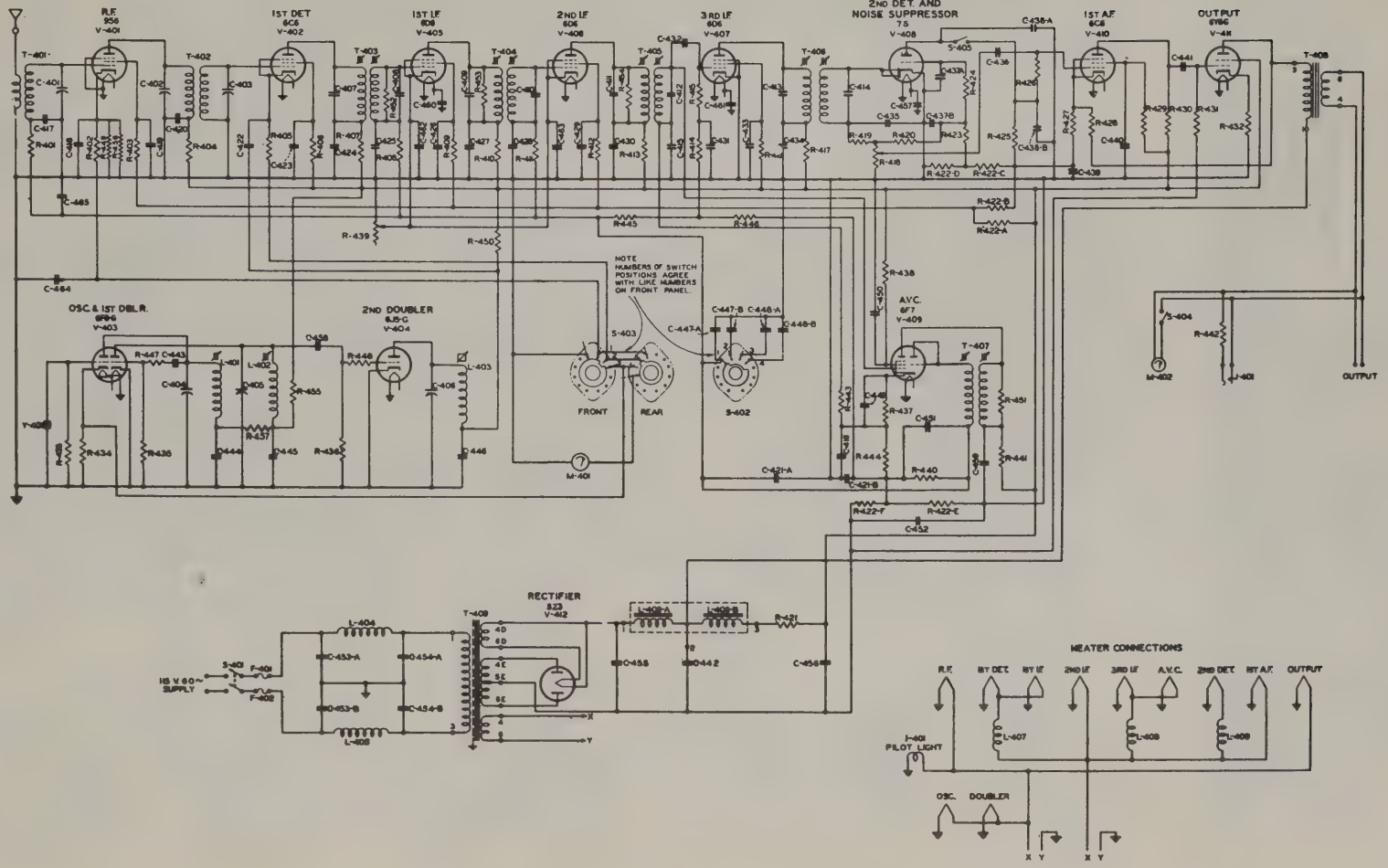
The AN/SPR-2 is classified as a radar receiver. Its purpose was to intercept enemy radar signals for analysis preparatory to countermeasures. It covers the frequency range of 1000 to 6000 mc, but can be used to 10000 mc if the signals are strong enough. Two tuning units are available, the TN-56/SPR-2 which covers 1000 to 3000 mc, and the TN-57 which covers 3000 to 6000 mc. Higher frequency operation is possible because the antenna input is directly to the mixer and harmonics of the oscillator are used to convert the signal to the 30 mc IF. An output is provided, before detection, for a connection to a 30 mc panoramic adapter such as the APA-10.



TBS Receiver

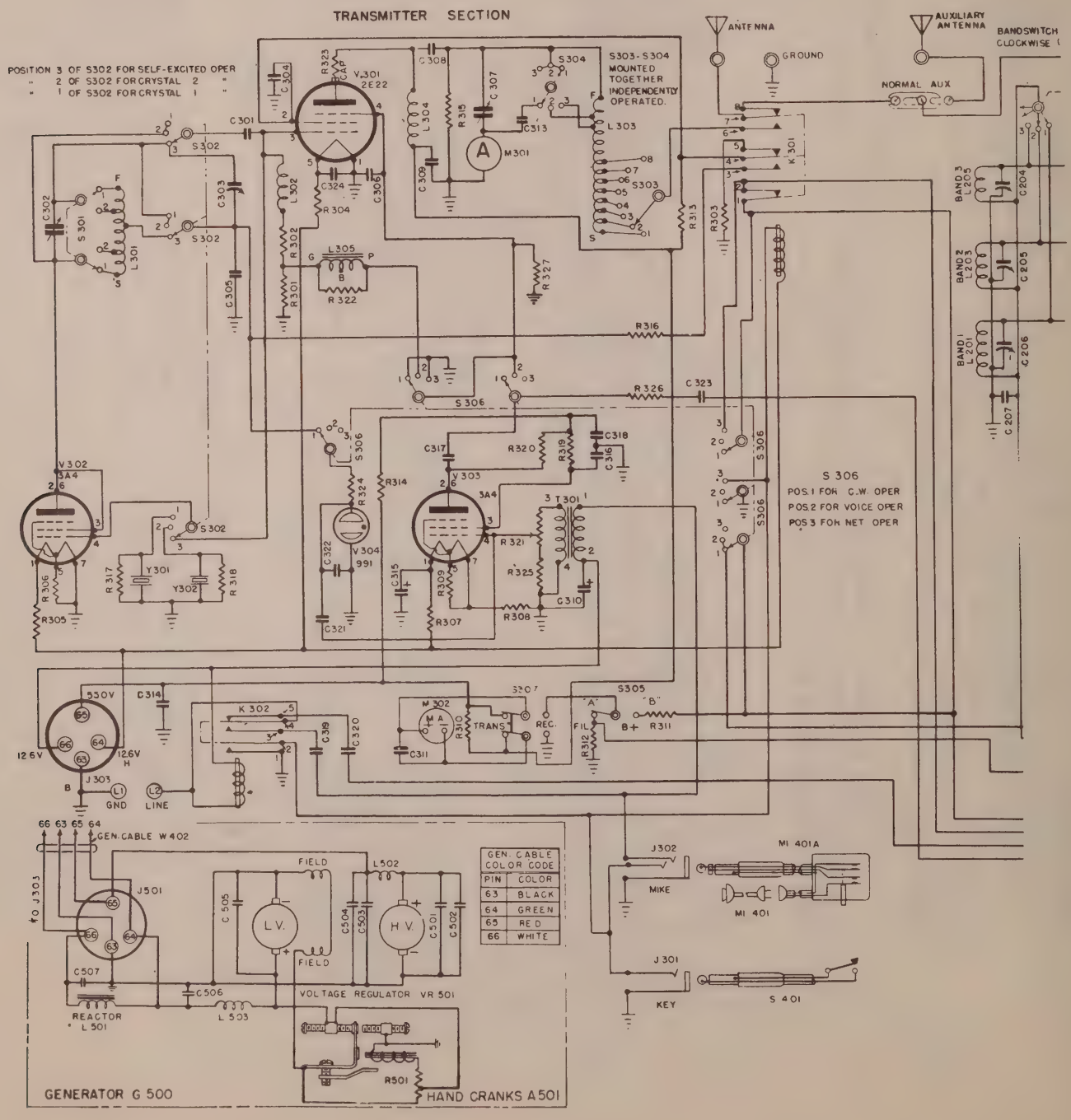
The TBS receiver is a 60 to 80 mc crystal controlled superheterodyne. It employs a 5.3 mc IF and operates directly from 110 volts 60 cps. Each stage of the RF amplifiers, the mixer and the oscillator multiplier is separately tuned and metered whenever necessary.

The TBS includes a noise limiter, AVC, output meter and is designed to operate from 50 ohm coax. The output is 600 ohms. For conversion data, see CQ, May 1958, p. 55.



TBX

Transmitter-receiver. The receiver tunes from 2.0-8.0 mc with an IF of 1515 kc; the transmitter tunes from 2.0-5.8 mc, running 40 watts input on CW and 10 watts on phone. Power: 6 volts bias, 1.5 volts filament and 90 volts for the receiver; 12.6 vdc at 2 amps and 500 volts at 80 ma for the transmitter. The circuit shown is for the TBX-8 which differs from previous models only in tube types and minor circuit changes.



RECEIVER RESISTORS

Symbol	Value
R201	200k ±10% ½w
R202	10k ±10% ½w
R203	50k ±10% ½w
R204	2.5k ±10% ½w
R205	1k ±10% ½w
R206	2 Meg. ±10% ½w
R207	10k ±10% ½w.
R208	1 Meg. ±10% ½w
R209	1 Meg. ±10% ½w
R210	50k ±10% ½w
R211	150k ±10% ½w
R212	20k ±10% Potentiometer
R213	30k ±10% ½w
R214	10k ±10% ½w
R215	6.8k ±10% ½w
R216	10k ±10% ½w
R217	500k ±10% ½w
R218	1k ±10% ½w

RECEIVER CAPACITORS

Symbol	Value
C201	13.3 mmfd Var.
C202	139.4 mmfd Var.
C203	250 mmfd ±10% 500v
C204	7-45 mmfd Var.
C205	7-45 mmfd Var.
C206	7-45 mmfd Var.
C207	0.02 mfd ±10% 400v
C208	700 mmfd ±1% 500v
C209	400 mmfd ±1% 500v
C210	300 mmfd ±1% 500v
C211	7-45 mmfd Var.
C212	7-45 mmfd Var.
C213	7-45 mmfd Var.
C214	7-45 mmfd Var.
C215	7-45 mmfd Var.
C216	7-45 mmfd Var.
C217	0.006 mfd ±10% 500v
C218	0.006 mfd ±10% 500v
C219	0.006 mfd ±10% 500v
C220	0.006 mfd ±10% 500v
C221	2x.5 mfd ±10% 200v
C222	0.006 mfd ±10% 500v
C223	0.006 mfd ±10% 500v
C224	100 mmfd ±10% 500v
C225	5 mmfd ±10% 500v
C226	2x.5 mfd ±10% 200v
C227	0.01 mfd ±10% 600v
C228	100 mmfd ±10% 500v
C229	13.3 mmfd Var.
C230	0.006 mfd ±10% 500v
C231	200 mmfd ±5% 500v
C232	0.006 mfd ±10% 500v
C233	200 mmfd ±5% 500v
C234	15 mmfd ±10% 500v
C235	500 mmfd ±10% 500v
C236	10 mfd Elec. 150v
C237	25 mmfd ±10% Ceramic
C238	25 mmfd ±10% Ceramic
C239	25 mmfd ±10% Ceramic
C240	250 mmfd ±10% 500v
C241	0.5 mfd ±20% 600v

TRANSMITTER RESISTORS

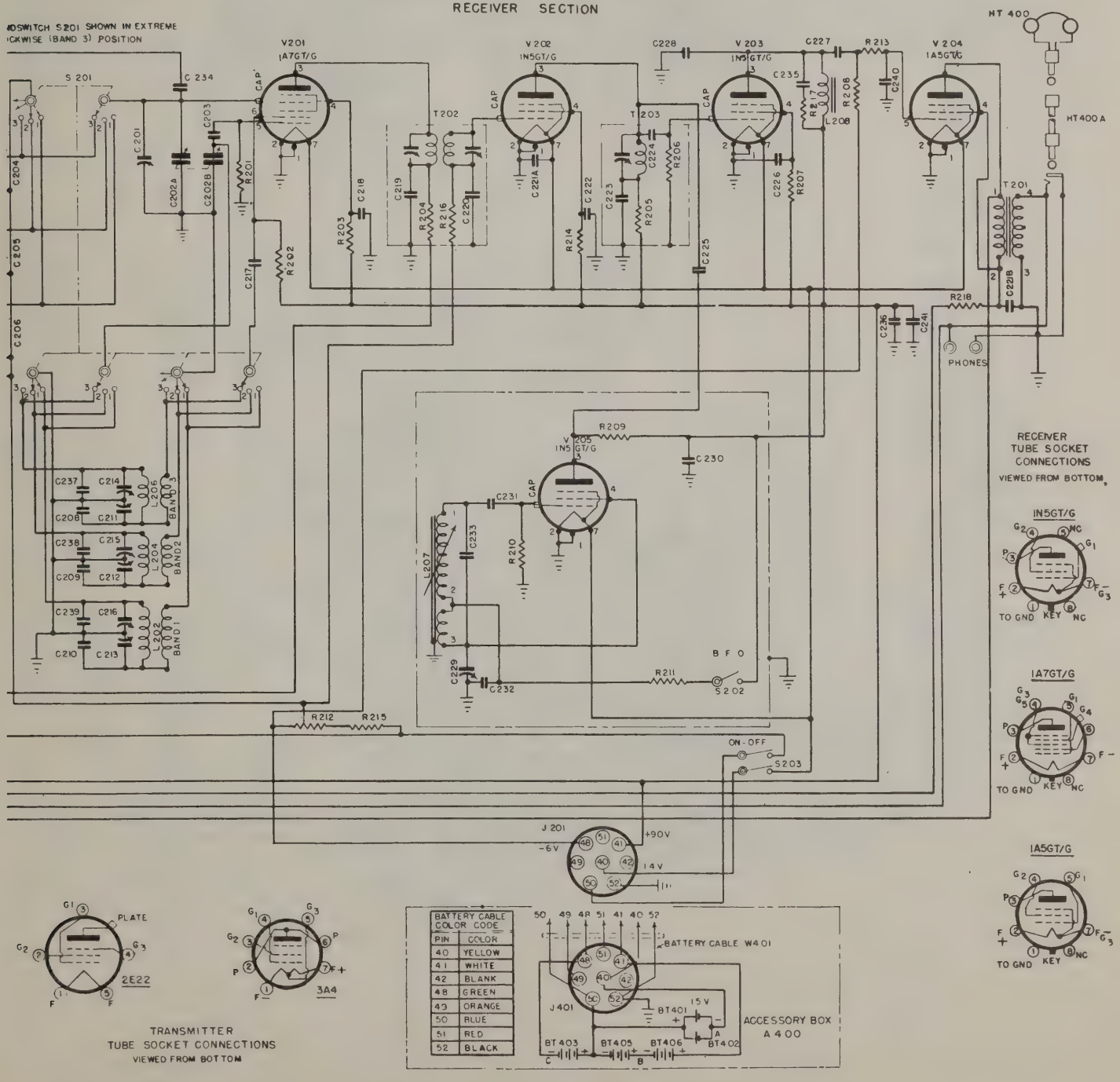
Symbol	Value
R301	10k ±5% ½w
R302	10k ±5% ½w
R303	5k ±10% 8w
R304	4.0 Ohms ±5% 20w
R305	100 Ohms ±5% 2w
R306	240 Ohms ±5% 1w
R307	30 Ohms ±5% 1w
R308	68 Ohms ±5% 2w
R309	390 Ohms ±5% 2w
R310	1.43 Ohms—Evac.
R311	140k—Evac.
R312	0.4 Ohms—Evac.
R313	20k ±10% 8w
R314	20k ±10% 8w
R315	2 Meg. ±10% ½w
R316	3.3k ±10% 1w
R317	100k ±5% ½w
R318	100k ±5% ½w
R319	68k ±10% ½w
R320	11k ±10% 1w
R321	100k ±10% Potentiometer
R322	68k ±10% ½w
R323	22 Ohms ±10% 1w
R324	2 Meg. ±10% ½w
R325	10k ±5% ½w
R326	150k ±10% ½w
R327	68k ±10% ½w

TRANSMITTER CAPACITORS

Symbol	Value
C301	100 mmfd ±2% 600v
C302	171 mmfd Var.
C303	25 mmfd Var.
C304	0.01 mfd ±10% 600v
C305	0.01 mfd ±10% 600v
C306	0.001 mfd ±10% 600v
C307	193 mmfd Var.
C308	0.001 mfd ±10% 600v
C309	0.01 mfd ±10% 1200v
C310	50 mfd Elec. 25v
C311	0.006 mfd ±10% 500v
C313	110 mmfd ±10% 1200v
C314	0.01 mfd ±10% 1200v
C315	50 mfd Elec. 25v
C316	0.5 mfd ±20% 600v
C317	0.5 mfd ±20% 600v
C318	0.5 mfd ±20% 600v
C319	1 mfd ±10% 600v
C320	1 mfd ±10% 600v
C321	0.006 mfd ±10% 500v
C322	0.0001 mfd ±10% 500v
C323	0.006 mfd ±10% 500v
C324	0.006 mfd ±10% 500v

k = Kilohms
Meg = Megohms

RECEIVER SECTION

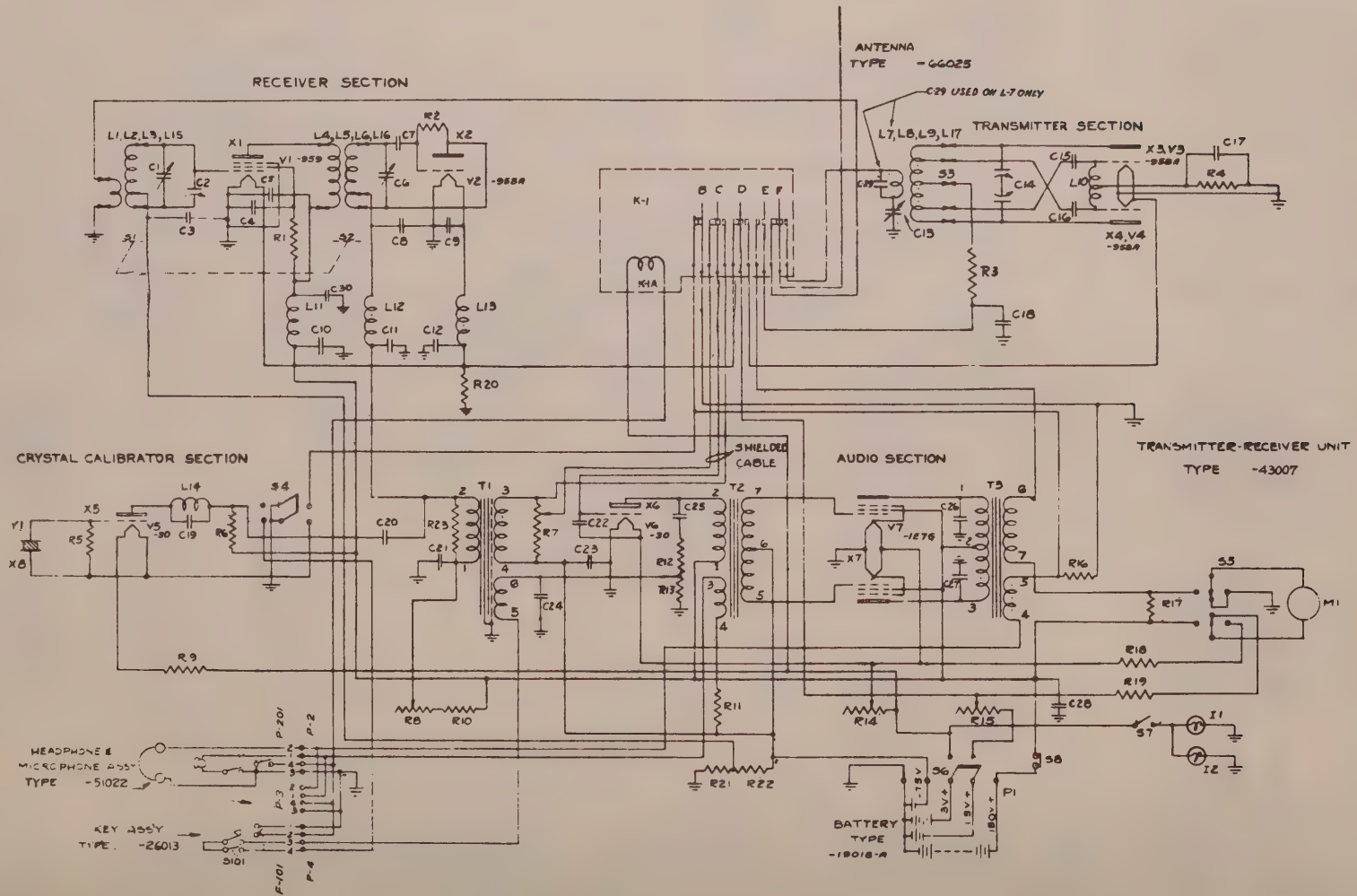


TRANSMITTER
TUBE SOCKET CONNECTIONS
VIEWED FROM BOTTOM

BATTERY CABLE COLOR CODE	
PIN	COLOR
40	YELLOW
41	WHITE
42	BLANK
48	GREEN
49	ORANGE
50	BLUE
51	RED
52	BLACK

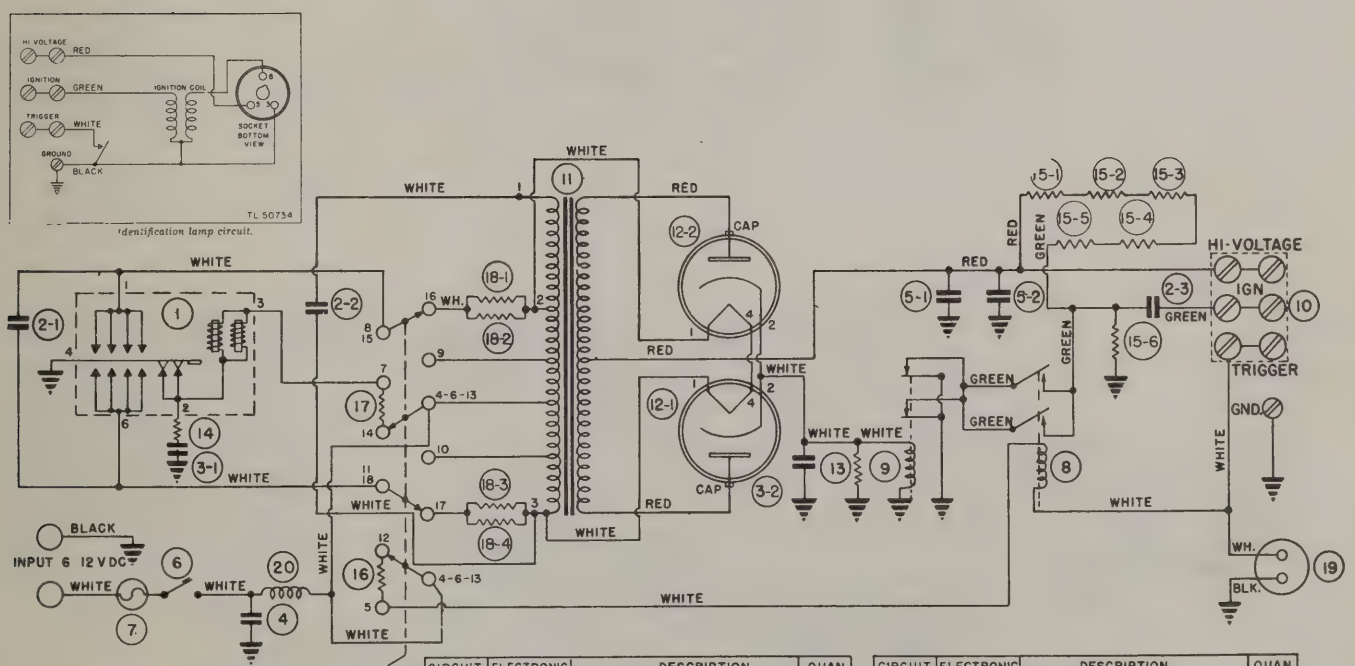
TBY

This is a small, battery operated, 28-40 mc transmitterpreceiver. Its instability makes it a poor unit for amateur use, very poor. For conversion data, see CQ, September 1957, P. 64.



AN/VVX-1

The AN/VVX-1 is an electron flash device, suitable for photographic purposes. It originally was used as an identification device for military vehicles, providing one pulse of light which could be aimed at the ground vehicle requiring identification. It is visible up to 3 miles in daylight. A suitable light shield is employed to aid in directing the lamp beam. The power supply is operated by six or 12 volts in the case of the PP-49/VVX-1 or twelve or 24 volts in the case of the PP-50/VVX-1X. The power supply generates 2000v DC for lamp operation -- DANGER HIGH VOLTAGE.



COLOR CODING	
BLACK	ALL GROUNDS
WHITE	UNGROUNDED PRIMARY & FILAMENT
GREEN	BIAS CIRCUIT
WHITE	TRIGGER & TIMING CIRCUIT
RED	HIGH VOLTAGE SECONDARY

CIRCUIT REF. NO.	ELECTRONIC TYPE NO.	DESCRIPTION	QUAN.
1	LTS-1282	VIBRATOR	1
2	C-118	CAPACITOR 1 MFD, 165 VAC	3
3	C-113	CAPACITOR 0.5 MFD, 50 V DC	2
4	C-268	CAPACITOR 0.5 MFD, 50 V DC	1
5	C-299	CAPACITOR 23 MFD, 2000 V DC	2
6	E-33	ON OFF SWITCH	1
* 7	E-37	FUSE, 40 AMP, 4AG (FOR 6V)	1
8	R-82	RELAY, TRIGGER CIRCUIT	1
9	R-105	RELAY, TIMING CIRCUIT	1
10	S-396	TERMINAL	1

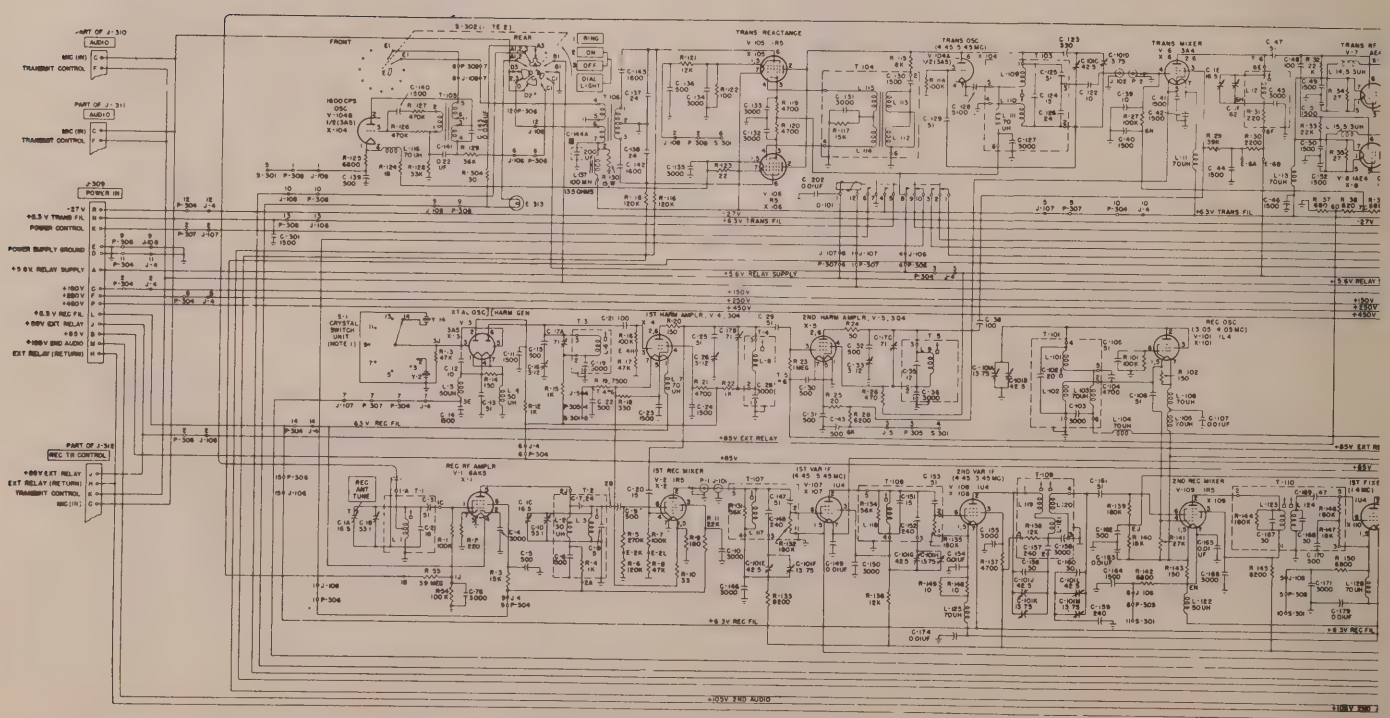
CIRCUIT REF. NO.	ELECTRONIC TYPE NO.	DESCRIPTION	QUAN.
11	A-1128	TRANSFORMER	1
12	12X3	TUBE, RECTIFIER	2
13	W-50	RESISTOR 500 OHM 10 WATT	1
14	W-78	RESISTOR 5 OHM $\frac{1}{2}$ WATT	1
15	W-59	RESISTOR 200,000 OHM 1 WATT	6
16	W-43	RESISTOR 50 OHM 10 WATT	1
17	W-42	RESISTOR 5 OHM 10 WATT	1
18	W-169	RESISTOR .25 OHM 10 WATT	4
19	S-214	CONNECTOR	1
20	A-1318	RF CHOKE	1

* FOR 12 VOLT OPERATION USE E-32 20 AMP. 4AG FUSE

AN/VRC-8-9-10

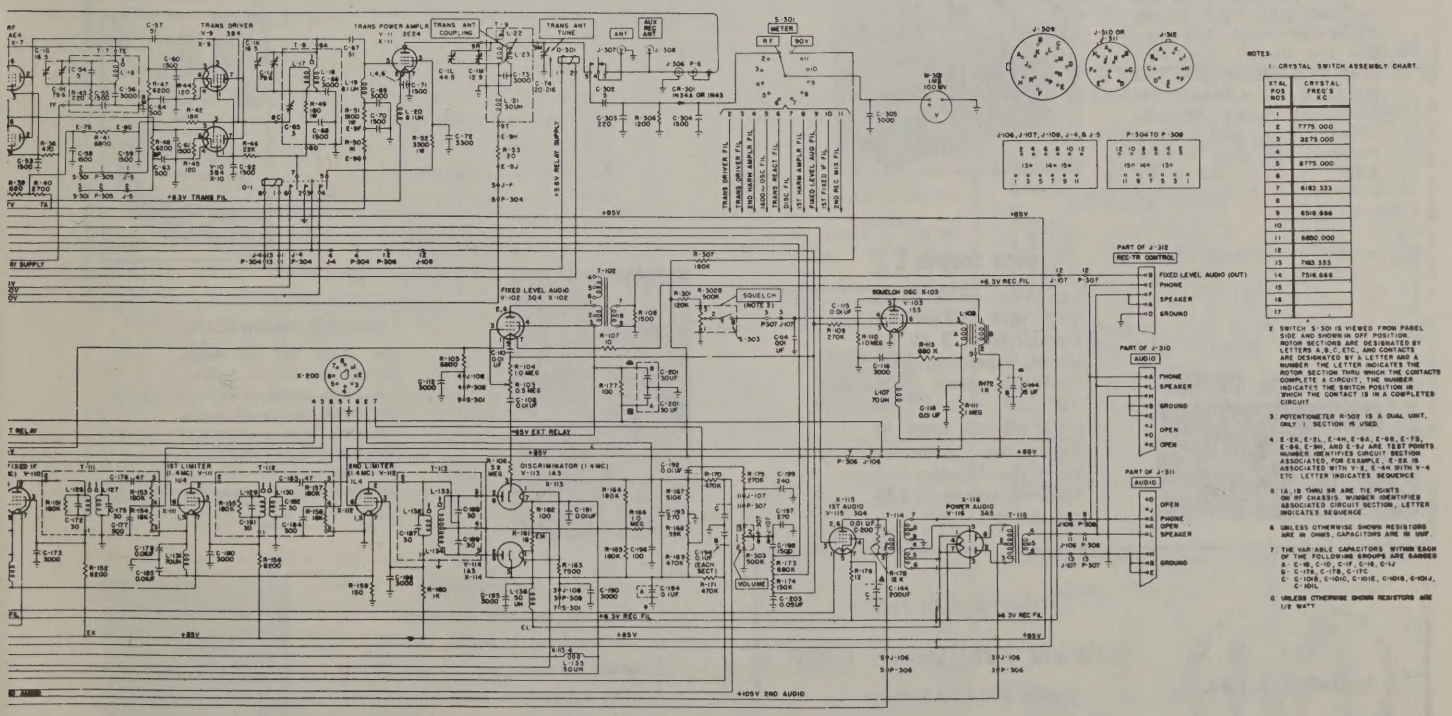
The AN/VRC-8-9 and 10 are three equipments that are primarily identical except for frequency range of operation. The AN/VRC-8 covers the range of 20.0 to 27.9 mc. The AN/VRC-9 covers the range of 27.0 to 38.9 mc. The AN/VRC-10 covers the range of 38.0 to 54.9 mc. The emision is FM and provision is made for voice and mcw (FM) operation. Provision is made for preset or continuous tuning type of frequency control. Push to talk as well as remote operation are features of this equipment. The power output may be either 2 watts or 16 watts depending upon the operation at low or high power. The receivers are extremely sensitive, being able to provide 30 db of quieting for a one-half microvolt signal. The input power is 12.6 volts at 2.3 amperes for receive and 11.9 amperes for transmit conditions or 24 volts at 1.5 amperes for receive and 7.3 amperes for transmit, under high power output. The basic receiver-transmitters have been assigned the nomenclatures as follows.

RT-66/GRC	for the	AN/VRC-8
RT-67/GRC	for the	AN/VRC-9
RT-68/GRC	for the	AN/VRC-10

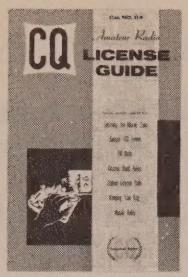


Each receiver is a double conversion superheterodyne. The RF amplifier tunes the signal and the first mixer converts it to a band of 4.45 to 5.45 mc whereupon the first IF stages are tuned to correct incoming signal and it is converted in the second mixer to the final (second) IF of 1.4 mc. Limiters operate in the second IF to eliminate any AM of the signal and allow the discriminator to operate properly. The receiver first oscillator uses a crystal oscillator and a harmonic generator operating at the low side of the signal. Likewise, the second oscillator operates at the low side of the signal. The transmitter oscillator is kept on frequency by sampling part of the transmitter oscillator signal and causing the reactance tube to keep the oscillator on frequency, by way of the discriminator action on the signal.

The equipment includes, AVC action, squelch, side tone provisions and a construction of extremely good quality.



THE CQ HAM MART



CQ LICENSE GUIDE

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212 pages of everything the Amateur must have to get his license and progress toward the general class ticket. Plus many additional pages of vital information for the ham operator. All this for only $2.50.

SIDEBAND HANDBOOK

Cat. #103. Written by Don Stoner, W6TNS, was almost one full year in the preparation of this terrific volume. This is *not* a *technical* book. It explains sideband, showing you how to get along with it . . . how to keep your rig working right . . . how to know when it isn't . . . and lots of how to build-it stuff, gadgets, receiving adaptors, exciters, amplifiers. 3.00

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Cat. #99. W1DBM's newly written TVI book (no reprints) covers all aspects of curing TVI from both the Ham's viewpoint and that of the TV viewer or the TV serviceman. It includes 2 and 6 meter TVI as well as Industrial, Medical and Utility TVI. Profusely illustrated with diagrams, photos, charts, tables and FCC regulations pertaining to radio and television interference. Price: $1.75 postpaid, USA, $2.00 Foreign.

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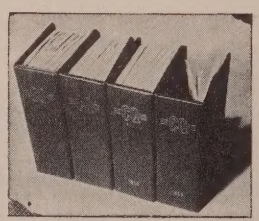

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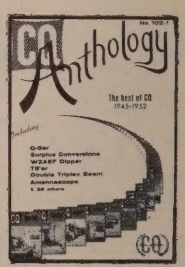

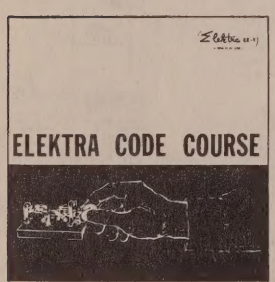

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Learning code is a snap with this record. Speeds from 3 to 16 WPM, depending upon turntable speed. This 12" LP record has on it all you need to learn the code for both the Novice and General license. 3.50
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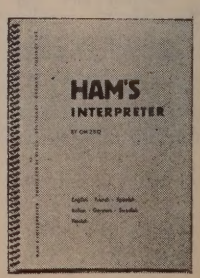

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WORTH $750)
OUR LOW PRICE **$29.50**

an be used with linear sweep
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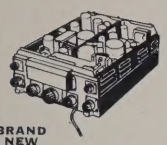
BRAND NEW.....$59.50

FAMOUS BC-645 TRANSCEIVER

15 Tubes 435 to 500 MC



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Can be modified for 2-way communication, voice or code, on ham band 420-450 mc. citizens radio 460-470 mc, fixed and mobile 450-460 mc. television experimental 470-500 mc. 15 tubes (tubes alone worth more than sale price!); 4—7F7, 4—7H7, 2—7E6, 2—6F6, 2—955 and 1—WE-316A. Now covers 460 to 490 mc. Brand new BC-645 wtih tubes, less power supply in factory carton.
Shipping weight 25 lbs. **SPECIAL!**.....**$19.50**

PE-101C Dynamotor, 12/24V input.....$7.95
UHF Antenna Assembly.....2.45
Complete Set of 10 Plugs.....5.50
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SPECIAL "PACKAGE" OFFER:
BC-645 Transceiver, Dynamotor and all accessories above. COMPLETE, BRAND NEW, While Stocks Last.....**$29.50**

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Circuit diagram and connecting plugs available.
We carry a complete line of spare parts for above.

LORAN APN-4
FINE QUALITY NAVIGATIONAL EQUIPMENT

Determine exact geographic position of your boat or plane. Indicator and receiver complete with all tubes and crystal.
INDICATOR ID-6B/APN-4, and RECEIVER R-9B/APN-4, complete with tubes. Exc. used **$49.50**
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2-meter Superhet. 100 to 156 Mc in 4 crystal channels. Complete with 10 Tubes. **BRAND NEW** **$24.45**
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SCR-274 COMMAND EQUIPMENT

ALL COMPLETE WITH TUBES

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BC-454	Receiver 3-6 Mc	10.45	12.45
BC-455	Receiver 6-9 Mc	11.50	13.95

110 Volt AC Power Supply Kit, for all 274-N and ARC-5 Receivers. Complete with metal case, instructions..... **$7.95**
Factory wired, tested, ready to operate...$11.50
SPLINED TUNING KNOB for 274-N and ARC-5 RECEIVERS. Fits BC-453, BC-454 and others. **Only**..... **49c**

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3 Amp. Hour, **BRAND NEW.** 3⅝" x 1-13/16" x 2⅜". Uses Standard Electrolyte .....Only **$2.95**

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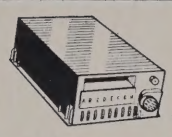

Complete with All Tubes Exc. Used..... **$16.95**
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Crystal-controlled 17-tube superhet, tunes from 100 to 156 MC., AM., on any 8 pre-selected channels. 28-volt DC power input. Tubes: 1-9002, 6-6AK5, 1-12SH7, 3-12SG7, 1-9001, 1-12H6, 2-12SN7, 1-12SL7, 1-12A6.

ARC-3 TRANSMITTER

Companion unit for above, tunes 100 to 156 MC on any 8 pre-selected channels. 9 tubes, crystal controlled, provides tone and voice modulation. 28V DC Power input. Complete with all Tubes: 3-6V6, 2-832A, 1-12SH7, 1-6J5, 2-6L6. Exc. Used.....Only **$16.95**
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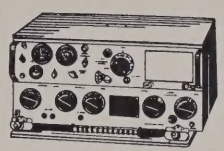
AN/ART-13 100-WATT XMTR

11 CHANNELS
200-1500 Kc
2 to 18.1 Mc



$48.50

Complete with Tubes
Famous Collins Autotune Aircraft Transmitter, AM, CW, MCW. Quick change to any of ten preset channels or manual tuning. Speech amplifier/clipper uses carbon or magnetic mike. Highly stable, highly accurate VFO. Built in Xtal controlled calibrator. PP811s modulate 813 in final up to 90%, class "B." A Real "HOT" Ham buy at our low price! Orig. cost $1800. Exc. Used.....**$48.50**
0-16 Low Freq. Osc. Coil for ART-13..... 7.95
24V Dynamotor for ART-13..... 11.95
Same as above less meter..... 39.50
We carry a complete line of spare parts for above.

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27 to 38.9 Mc. F.M. Two preselected channels crystal controlled. 5 watts. Complete with speaker, tubes. Used..... **$10.95**
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ARB/CRV 46151—190 to 9050 Kc in 4 bands. 6 Tube Superhet communications receiver, with local and remote tuning, band change. Sharp and broad tuning. AVC, CW. Illuminated dial. Complete with tubes and dynamotor. BRAND NEW....$34.50
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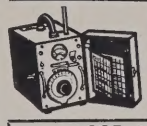

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Cavity type, 145 to 235 Mc. BRAND NEW, complete with antenna. Manual included. OUR LOW PRICE..... **$10.88**

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Very fine unit, made by Collins Radio. Consists of TWO Dynamotors mounted on filter base.

	INPUT	OUTPUT
Dynamotor #1	12VDC @ 3.8A	220VDC @ 100 Ma.
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BRAND NEW, in original packing, shpg wt 29 lbs. OUR LOW PRICE..... **$7.95**

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Model DM35

Input 12V DC. Output: 625 V DC @ 225 Ma, for press-to-talk intermittent operation. Shpg. wt. 14 lbs. OUR LOW PRICE, BRAND NEW. $8.95

OTHER DYNAMOTOR VALUES: Type	Input	Output	Excellent Used	BRAND NEW
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DA-1A	28V 1.6A	230V .100A		3.25
DM-28	28V	224V .07A	2.75	4.75
DM-32A	28V 1.1A	250V .05A	2.45	4.45
DM-33A	28V 5A	575V .16A		
	28V 7A	540V .25A	1.95	3.75
DM-34D	12V 2A	220V .080A	4.15	5.50
DM-53A	28V 1.4A	220V .080A	3.75	5.45
DM-64A	12V 5.1A	275V .150A		7.95
PE-73C	28V 20A	1000V .350A	8.95	14.95
PE-86	28V 1.25A	250V .050A	2.75	3.85

BD-77 DYNAMOTOR Input 14V @ 39A. Output 1000V @ .350A with starting solenoid, Filter Box and Mounting Base.....Like New $14.95

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53 Vesey St. 75-77 Leonard St.
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For aligning and calibration of radio altimeters. May be used to check calibration of count or circuits and modulator sweep freq. and bandwidth of transmitter. Audio-oscillator range: 340 to 7250 cycles. 13/14 V.DC input. Complete with tubes, connecting cables, instruction summary, BRAND NEW ... **$9.95**

BC-603 FM RECEIVER

20 TO 27.9 MC.

Excellent Used..... **$14.95**
BRAND NEW.....**$18.95**

10-channel, pushbutton or continuous tuning. Complete with speaker, squelch, and ten tubes: 3-6AG7, 1-6J5, 2-12SG7, 1-6H6, 1-6V6, 2-6SL7.

EXTRA SET OF 10 TUBES FOR ABOVE brand new in original boxes.....$3.95

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BC-604 TRANSMITTER—Companion unit for BC-603 Rcvr above. With all tubes, BRAND NEW.....$6.95
We carry a complete line of spare parts for above.

SPECIAL! BC-603 FM RCVR CONVERTED FOR ANY FREQUENCY FROM 30 TO 50 MEGACYCLES!
BRAND NEW! Checked out, perfect working condition, ready for operation. Specify Frequency desired (between 30-50 Mc) when ordering. **$27.50**

AC POWER SUPPLY FOR BC603, 683
Interchangeable, replaces dynamotor. Has On-Off Switch. NO RECVR. CHANGE NEEDED. Provides 220 VDC @ 80 Ma. 24VAC @ 2 Amps.....$9.25
Complete 240-page Technical Manual for BC-603, 604.....$3.15

AN/APR-4 RECEIVER only .38 to 4000 Mc in 5 tuning unit ranges. High precision laboratory instrument used to monitor or indicate frequency of any signals within its range. Includes wide and narrow band IF strip selected from panel. Outputs provided for attachments to pulse analyzer, panadapter, etc. Input 115 V 60 cy. LIKE NEW..... **$69.50**
Tuning Units: TN16, TN17, TN18.....each $39.50
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RECEIVER SPECIALS!

BC-312 MOBILE RECEIVER 6 Bands, 1500 Kc to 18 Mc. With Tubes and 14V Dynamotor. Exc. Used..... **$59.50**
BC-342 RECEIVER 1.5 to 18 Mc, AC only. Exc. Used..... **$69.50**
BC-348 SUPERHET Receiver 200 to 500 Kc and 1.5 to 1800 Mc. Voice, tone, CW. Self-contained dynamotor for 24 VDC. Like NEW.....$69.50

BC1206-C BEACON RECEIVER

195 to 420 Kc. made by Setchel - Carlson. Works on 24-28 volts DC. 135 Kc. IF. Complete with 5 tubes. Size 4" x 4" x 6". Wt. 4 lbs. BRAND NEW... **$9.99**
Brand New, less tubes...$5.95
USED, with tubes..... 5.95
USED, less tubes..... 2.95

SCR-522 2-METER RIG!

Terrific buy! VHF Transmitter-receiver, 100-156 Mc, 4 channels. Xtal-controlled. Amplitude modulated voice. They're going fast! Excellent condition.
SCR-522 Transmitter-Receiver, complete with all 18 tubes, top rack and metal case.
COMBINATION. Exc. Used..... **$29.50**

MICROPHONES

Model	Description	Excellent Used	BRAND NEW
T-17	Carbon Hand Mike		$5.45
T-30	Carbon Throat Mike	$ .34	.74
T-45	Army and Navy Lip Mike		1.25
TS-9	Handset		3.88
TS-11	Handset		3.95
TS-13	Handset		4.25
RS-38	Navy Type		4.75

HEADPHONES

Model	Description	Excellent Used	BRAND NEW
HS-23	High Impedance	$2.19	$4.49
HS-33	Low Impedance	2.69	4.59
HS-30	Low Imp. (featherwt.)	.90	1.65
H-16/U	High Imp. (2 units)	3.75	7.95
TELEPHONICS—600 ohm Low Impedance HEADSETS. BRAND NEW. PER PAIR			$3.25
CD-307A Cords, with PL55 plug and JK26 Jack			.99
Earphone Cushions for above—pair			.50

TG-34A CODE KEYER

Self-contained automatic unit, reproduces code practice signals recorded on paper tape. By use of built-in speaker, provides code-practice signals to one or more persons at speeds from 5 to 25 WPM. Checked out, exc. used.....$18.95
Signal Reels of Tape, Each...$1.85

BRAND NEW $22.50

EE-8 ARMY FIELD PHONES. Excellent condition checked out, perfect working order, complete with all parts less battery. Each.....$12.95

5-TUBE AMPLIFIER

Made by Pioneer Instrument Co. Uses 2—6SN7 1—6X5, 2—6H6 tubes.
BRAND NEW.....VERY SPECIAL **$2.49**

STANDARD TUBES

Removed from Brand New Gov't Equipment

RECEIVING					
6AG5	.35	12SG7	.75	807	.95
12AT7	.45	6J5	.65	813	6.95
6AK5	.40	6H6	.55	814	2.25
6C4	.25	6SL7	.45	815	2.15
6AL5	.38	12A6	.45	826	.44
6AC7	.55	SPECIAL PURP.		1625	.29
6J6	.32	2C39	3.50	4X-150	5.95
6V6	.65	3E29	4.25	6072	2.50
				1P25A	7.95

BC-605 INTERPHONE AMPLIFIER
BRAND NEW.....Each $4.95

234-258 MC RECEIVER
AN/ARR-2

BRAND NEW 11-tube UHF Tunable Receiver with schematic. Only a few at this low price!
Complete with tubes **$8.88**

Send Name, Address on Post Card for FREE CATALOG of Wonderful Surplus Buys!

BARRY'S BEST BUYS

- **TCS Noise Limiters** — Complete Adaptor unit w/spec. sheet .....**99¢ each**
- **T17 Mike**/new **$4.95**
- **Hi-Fi Special**—W.E. 300B Audio Output Tubes **$5.50 ea.** .....**2 for $10.00**
- **3 BPI-3"** Cathode-Ray Tube with Socket—New—R/E .....Both for **$1.50**
- **AN-9000 UHF Antenna Assembly**—Type AS-32/APXI weatherproof yellow finish. Antenna height 16¼" .....price **$1.00**
- **CR-1 Snooperscope Tube**—Unused w/specs. **$2.50**
- **BC-457A** (4 to 5.3 Mcs.) **XMTR** used **$4.95**
- **BC-458A** (5.3 to 7 Mcs.) **XMTR** used **$4.95**
- **1" Round**—0-200 microamps, Mf'd. by Int'l. Inst. **$2.95**
- **Mallory Inductuner**—Unused. This famous device is an excellent VHF front-end tuner suitable for TV, FM, Ham/Comm'l revrs. etc. Brand new, unused. Tunes from 55 thru 220 mcs. **$2.95**
- **C. D. Model No. 3414 Heavy-Duty** 300 Volts D.C. Output at 335 MA. Vibrator Supply Units are made with the finest of components and best construction for long trouble-free use. All units are brand new, packed in original C.D. Jobber-Cartons. Units come complete with two CK-1006 Rectifier Tubes and C.D. Vibrator Type 12VF10. Input: 12.6 VDC. Output: 300 Volts D.C. at 335 Miliamperes. Size: 8-½" High x 13-¼" Wide x 7-¼" Deep. Weight: 28 lbs. Catalog No. CD-3414 .....**$15.00**

FACTORY DISTRIBUTORS FOR NATIONAL, JOHNSON, B&W and HAMMARLUND!

- **Wanted to Buy:** Many types of unused tubes, semi-conductors and equipment.

- **UHF Beacon Transmitter**—Compact. Near 1-¼ meter band. Converts easily to 2 meters. Uses (2) 6201's. into single Amperex 6360 twin triode. Size: 4" x 4" x 11". Antenna is 10-½". NEW. (Most beautiful rig. Finest parts we have seen in years). A real gem, complete with tubes, antenna and case (no book). Price: **$19.95.** Battery for above Transmitter furnishes 300 VDC plate and 6.3 VDC filament. Submersible type **$4.95**
- **Relay Rack Panel**—8¾" x 19. Beautiful comm'l grey ⅛" steel. .....**each 90¢**

- **FTR Transformer** "Little Gem"—Pri: 19,000 Ohms. Sec: 600 Ohms 1⅛" x 1⅛" x 2" high. Hermetically sealed. Brand new, original boxed. Mfd., by Federal Tel. & Radio. Ultra compact construction. Weight less than 2 ozs. Ideal for use as plate to line or line to grid, phone patch and telephone uses. Designed for audio use in range from 250 to 2500 CPS. Catalog No. GH-1202. Price **49¢** each. (Lots of 10 **35¢** ea.)
- **Filter Choke**—.35 Hy. @ 2 Amps (2.2 Ohms DC resistance) Herm. Sld.—**$4.95.** Open frame **$3.95**
- **TS-78/U Tune-Up "Dummy" Load**—Excellent for citizen Band or VHF **$1.00**
- **HS-30 Headsets with Headband & Impedance Matching Xfmr.** Works on hi/lo imped. **$1.59**
- **Silicon Rectifier**—500 Ma.—130 V. (RMS) Special .....**70¢**

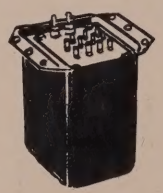
Barry's Green Sheet 25¢—(Chock full of Ham and Industrial electronic components, equipment and electronic tubes). Has prices for tubes, semi-conductors, tube cartons. ALL at sensible prices with Barry guarantee (cost of mdse only). $5.00 minimum order. Mdse subject to prior sale. INDUSTRIAL INQUIRIES INVITED. Factory authorized distributors for Westinghouse tubes and semiconductors.

- **Westinghouse Scope Transformer**—Pri: 115 VAC @ 60 CPS (16.5 VA.) Sec: 2.5 Volts @ 3 Amps. Sec: 3890 V. @ .0023 Amps. Brand New. Weight: 9 lbs. **$3.95**

- **3/16 H.P. Continuous Duty Motor**—MFD. by Russell Electric. 115 VDC. at 1.8 Amps. temperature rise: 40° C. — 3450 R.P.M. Dimensions: Overall height: 6¼". Diameter 5". Shipping weight: 30 lbs. Brand new in original cartons. Very special price **$4.95**

B&W MINI-DUCTORS STOCKED

- **Sontone Rechargeable Battery Cartridge**—Model FC-2 .....**$7.95**
- **Johnson Citizen's Band Messenger**—12 VDC/115 VAC. .....**$139.75 each**



- **Hammarlund Super-Pro Power Transformer**—Manufactured by Chicago Transformer Co.—Beautiful heavy-duty construction. Hermetically sealed Pri: 115 or 230 volts at 60 cps. Sec: 435-0-435 at 160 Ma. R.M.S. (Bias Tap: 315 volts at 11 Ma.) Filament secondaries: (1) 6.3 volts at 7 amps. (2) 5.0 volts at 2 amps. (3) 5.0 volts at 3 amps. Dimensions: 7" h. x 6½" w. (including flanges) x 6⅛" d. Net weight 20½ lbs. This transformer is type used in power supply model RA-94A and is designated T-3. Unused. ....**Special Price $4.50**

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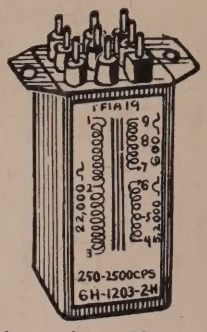
512 BROADWAY (NEAR SPRING ST.), DEPT. S-S
New York 12, N. Y. WAlker 5-7000

- **Super Pro Choke**—50 Hy. @ 120 Ma. Herm. sd. (1150 Ohms DC resistance) 6½ lbs. **$1.00**
- **Super-Pro Choke**—45 Hys. @ 120 ma—920 Ohms—H.S. **$1.00**



- **SSB Versatile Miniature Transformer**—Same as used in W2EWL SSB rig — March '56 QST. 3 sets of C.T. windings for a combination of impedances: 600 Ohms, 5200 Ohms, 22000 ohms. (By using the center taps the impedances are quartered.) The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, phone patch, line to grid or plate, impedance choke, etc. Size only 2" H x ¾" w. x ¾ d. Brand new—fully shielded in original cartons. Weight: 2½ ounces. **95¢ each,** 3 for **$2.50,** 10 for **$7.50.**
- **Glas-Line Non-Metallic Guy Line**—(eliminates need for glass (break-up" insulators) Strong, weather resistant, plastic coated spun glass fibers form a high tensile strength (9 strands) guy cable. Ideally suited for the heaviest amateur antenna in use today. Extensively used in commercial service too. Guaranteed not to rot, rust, or deteriorate for five years or more. Packed in 600 ft. reels, but sold in any multiple of 100 ft. Per 100 feet **$2.98**—600 foot Roll **$17.00.**
- **New! Super-Test Glass-Line**—(1,000 lbs. tensile strength—18 strands.) Sold in 600 ft. rolls. 100 ft. **$5.50—$31.54** per 600 ft. roll.
- **AC Voltmeter**—0 to 250 VAC. Full-scale 2½" Round. 117 volt point marked in red to show normal voltage. Mfd for Stancor. **$1.75**
- **BC-603 Power Supply**—Completely wired, ready to operate. For the popular BC-603 receivers. Has exact connector. 115 VAC 60 CPS operation. **$9.95**
- **AC Voltmeter**—0 to 250 VAC. Full-cale 2½" round. 220 volt marked in red to show normal voltage. Mfd for Stancor. $1.75
- **Quartz Crystals, Type FT-243**—In series of 120 pieces per set from 5675 KC to 8650 KC. Ten sets per wood case. **.35** each. **($30.00** per set of 120 pcs.)
- **CK-722** .....**85¢**

Other Transistors and Diodes in stock.

- **Special Transmitting & Special Purpose Tubes:** 3B28 @ **$3.00;** 4-125A @ **$29.00;** 4-250A @ **$38.00;** 4X150A @ **$7.00;** 4X250B @ **35.00;** RKR-72 @ **15¢** HF-100 @ **$8.00;** 204A @ **$12.00;** 300B @ **$5.50;** 404A/5847 @ **$6.00;** 807 @ **$1.15;** 811 @ **$3.25;** 830B @ **50¢;** 837 @ **$1.00;** 838 @ **$1.00;** 884 @ **90¢;** 5654 @ **$1.75;** 8013 @ **$3.00** Many others. Largest diversified tube stock in country. Write for Special purpose & xmtg tube catalog (free).